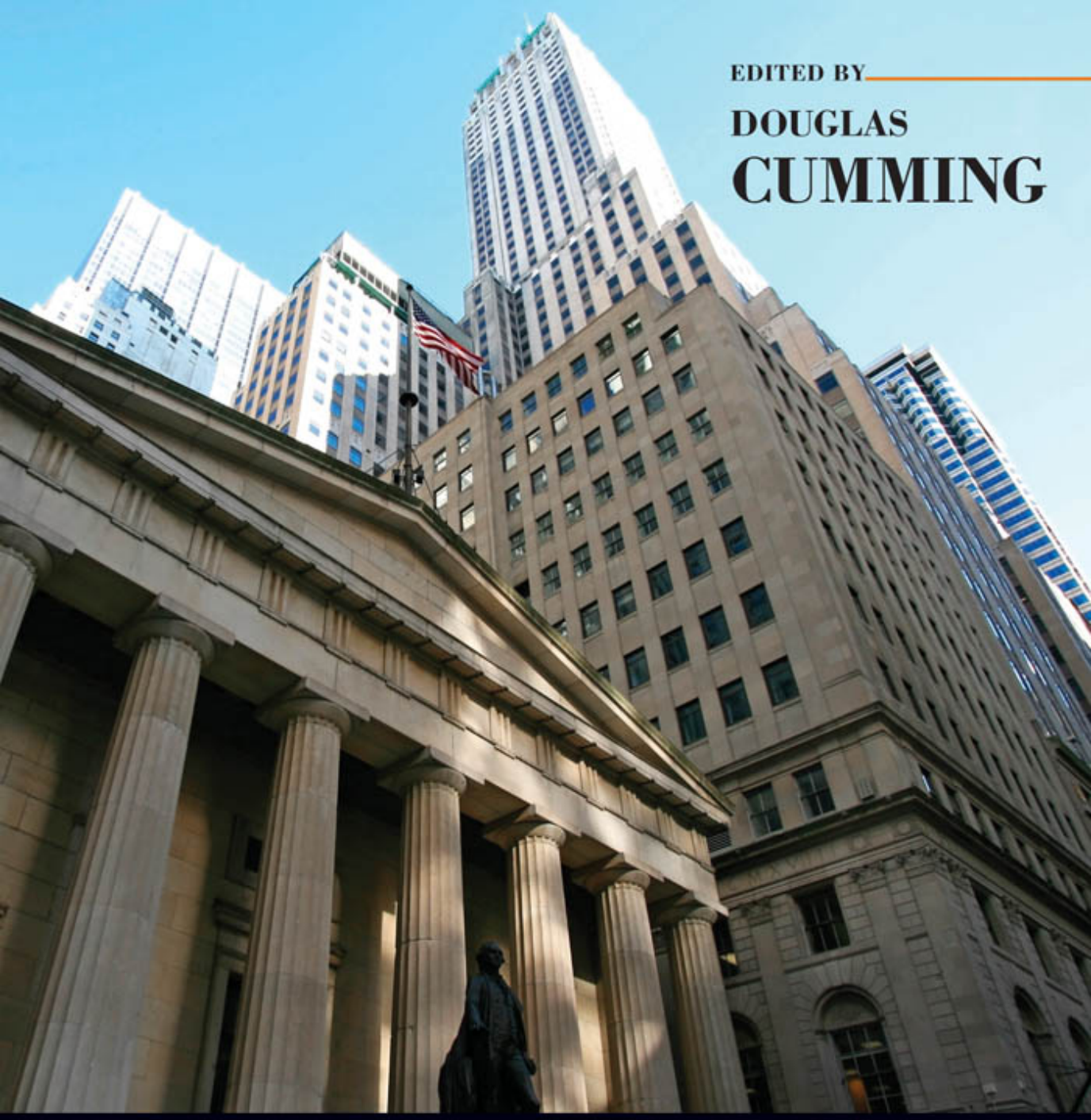

EDITED BY

DOUGLAS
CUMMING

The Oxford Handbook *of*
PRIVATE EQUITY

THE OXFORD HANDBOOK OF

PRIVATE EQUITY

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PRIVATE EQUITY

Edited by

DOUGLAS CUMMING

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INTRODUCTION

DOUGLAS CUMMING

Private equity refers, typically, to the asset class of equity securities in companies that are not publicly traded on a stock exchange.[1] The term "private equity" typically includes investments in venture capital or growth investment, as well as late-stage, mezzanine, turnaround (distressed), and buyout investments. In *The Oxford Handbook of Private Equity*, however, unless specified otherwise, we refer to private equity with a focus on late-stage, mezzanine, turnaround, and buyout investments. A companion handbook, *The Oxford Handbook of Venture Capital*, focuses on early-stage venture capital and growth-oriented investments.

The aim of *The Oxford Handbook of Private Equity* is to provide a comprehensive picture of all of these issues dealing with the structure, governance, and performance of private equity. To be sure, this is a daunting task, and there will undoubtedly be readers who feel that certain topics that might have been covered in more detail herein have been treated too lightly and that references to certain works are absent. To mitigate the possibility of this perspective, the *Handbook* comprises contributions from forty-one authors in twenty-five chapters. The authors are currently based in fourteen different countries: Australia, Belgium, Canada, China, Germany, Hong Kong, Italy, Japan, the Netherlands, Sweden, Singapore, Switzerland, the United Kingdom, and the United States. Moreover these authors collectively have international work experience that spans the globe and represent some of the world's leading researchers in their areas of expertise. As well, two complementary handbooks were prepared concurrently with *The Oxford Handbook of Private Equity*: *The Oxford Handbook of Entrepreneurial Finance* and *The Oxford Handbook of Venture Capital*. Issues dealing with entrepreneurial finance and venture capital are considered in the *Handbook of Private Equity* as they fall within the scope of private equity, but a much more detailed treatment of each is provided in their respective volumes.

While private equity typically refers to "private," not publicly traded, investee companies, private equity funds do in fact make investments in publicly held companies. In fact chapters 4 and 5 of this *Handbook* cover such public investments. Moreover chapters 20, 21, and 22 discuss private equity funds and firms that are themselves publicly traded. A listed private equity firm (management company) provides shareholders an opportunity to gain exposure to the management fees and carried interest earned by the investment professionals and managers of the private equity firm. A classic example of a private equity firm going public is the Blackstone IPO on June 22, 2007, which raised $4 billion. A listed private equity fund or similar investment vehicle allows investors who would otherwise be unable to invest in a traditional private equity limited partnership to gain exposure to a portfolio of private equity investment. For example, on February 9, 2007, Fortress became the first hedge fund and private equity company to go public in the United States when it sold an approximately 39 percent stake and raised $634 million. The one-year return to shareholders from the Blackstone IPO was –42 percent, and the one-year return to shareholders in the Fortress was –79 percent (Gogineni and Megginson, 2010).

It is widely recognized that the private equity industry is subject to massive booms and busts. Particularly since the start of the financial crisis in August 2007, private equity has been in hard times. Private equity–sponsored leveraged buyouts are often financed with 75 percent debt from an external debt provided and 25 percent equity from the private equity sponsor (Cao et al., 2010). In view of the credit crisis beginning in 2007, therefore, it is not surprising that private equity deals have been hit particularly hard. Moreover investment patterns in private equity closely follow initial public offering (IPO) market cycles (Cumming et al., 2005), since private equity investors often invest with a view toward exiting via an IPO (Black and Gilson, 1998; Cumming, 2008; Cumming and Johan, 2008, 2009).

It is straightforward to follow up-to-date specific market trends in private equity, either from accessing publicly available data sets such as Pitchbook or from purchasing data from vendors such as Thomson SDC or Zephyr DBV.[2] In view of the massive boom and bust in recent times, I present data to Q3 2010 herein from Pitchbook that shows the current state of the private equity industry in the United States. Figure I.1 shows that the number of new funds raised and the total amount raised by private equity funds in the United States dropped significantly in 2009 and 2010 relative to 2007 and 2008. Figure I.2 shows that over time private equity funds on average have become larger, with the exception of funds that are in excess of $5 billion in capital under management. The growth in the size of private equity funds is not necessarily a good trend. Chapter 15 indicates that private equity exhibits diseconomies of scale, lower returns, and worse exit results because of limited attention (see also Cumming, 2006; Nahata, 2008; Cumming and Walz, 2010; Lopez de Silanes et al., 2010; Humphery-Jenner, 2010).

The number of private equity investments fell sharply in 2008–2010 relative to the peak in 2007 (Figure I.3). The drop in the number of investments is not attributable to the lack of funds; rather as of 2010 there is $485 billion in "dry power," or

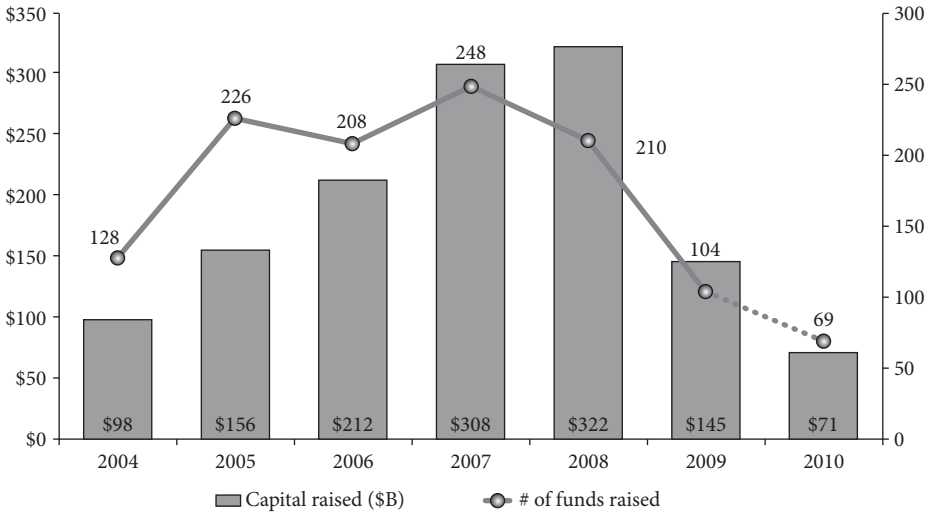

Figure I.1 Number of funds closed and total capital raised by year in the United States.
Source: Pitchbook, http://www.pitchbook.com/.

uninvested capital that has been committed to funds but not yet invested (Figure I.4). Similarly Figure I.5 shows that private equity funds are holding on to their investments longer prior to exit in 2009 and 2010. Investment duration to exit was 4.7 and 4.9 years in 2009 and 2010, but 4.2 years in 2008 and 4.1 years in 2007. Investment duration was 3.9 years and 3.8 years in both 2005 and 2006. The influence of market conditions on investment duration is consistent in academic studies on topic (Giot and Schwienbacher, 2007; Nahata, 2008; Cumming and Johan, 2010).

Figure I.6 shows that median exit values have not changed significantly over time. However, Figure I.7 shows that exits by way of IPO have become relatively

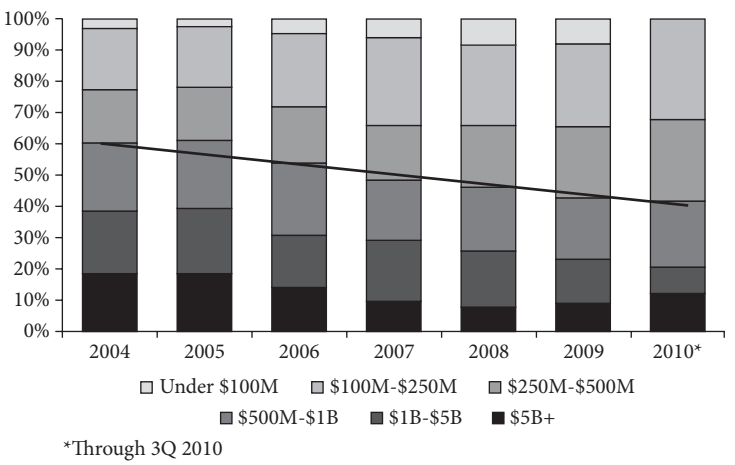

Figure I.2 Percentage of U.S. private equity funds (count), by size.
Source: Pitchbook, http://www.pitchbook.com/.

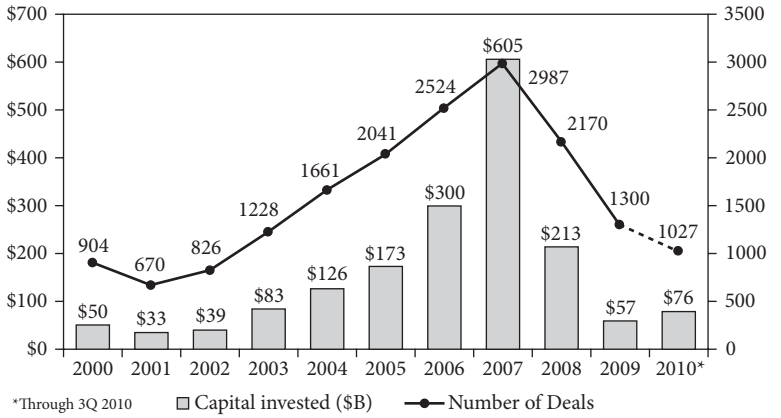

Figure I.3 Private equity amounts invested in the United States.
Source: Pitchbook, http://www.pitchbook.com/.

uncommon in the United States. Ljungqvist (2010) attributes this fall in IPOs to the excessive regulatory regime after the 2002 Sarbanes-Oxley legislation, and notes that in 2009 there were more IPOs in regions such as Hong Kong than in the entire United States.

Figure I.8 shows significant differences in average internal rates of return (IRRs) of funds depending on their vintage year and type of fund. From 2000 to 2005 private equity funds outperformed their venture capital, fund-of-funds, and mezzanine counterparts of the same vintage year. For all vintage years except 1998, venture capital average IRRs since inception have been negative. Figure I.9 shows a similar result for median one-year rolling horizon IRRs by fund type. Figure I.10 also presents a similar picture, showing that private equity horizon IRRs (based on

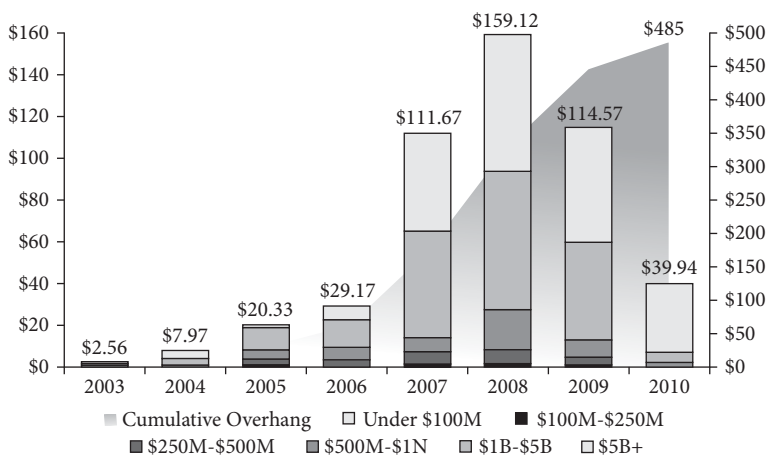

Figure I.4 Dry powder: Capital overhang for private equity funds raised by U.S. investors.
Source: Pitchbook, http://www.pitchbook.com/.

Figure I.5 Holding period from buyout to exit for U.S. buyouts.
Source: Pitchbook, http://www.pitchbook.com/.

long-term index holdings) outperform venture capital (for one-, three-, and five-year horizons) and the Russell 3000 index (for the three- and five-year horizons). Figure I.11 shows that average IRRs are not necessarily directly related to fund size for large versus small funds. However, Figure I.12 shows that 50 percent of all private equity funds have a 7.6 percent IRR or higher, and that larger funds, over $5 billion, have substantially lower performance consistent with the scale diseconomies literature referred to above.

The Oxford Handbook of Private Equity is organized into seven parts. Part I covers the topics pertaining to the structure of private equity funds. Part II deals with the performance and governance of leveraged buyouts. Part III analyzes club deals in private equity, otherwise referred to as syndicated investments with multiple investors per investees. Part IV provides analyses of the real effects of private equity. Part V

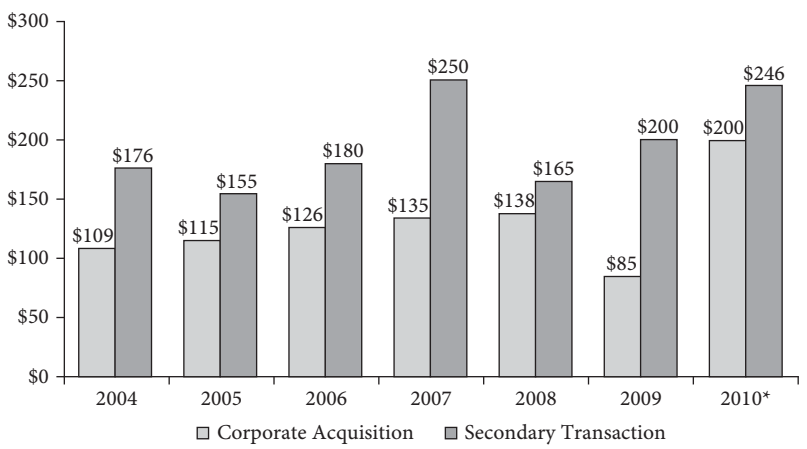

Figure I.6 Median size ($m) of U.S. private equity exits.
Source: Pitchbook, http://www.pitchbook.com/.

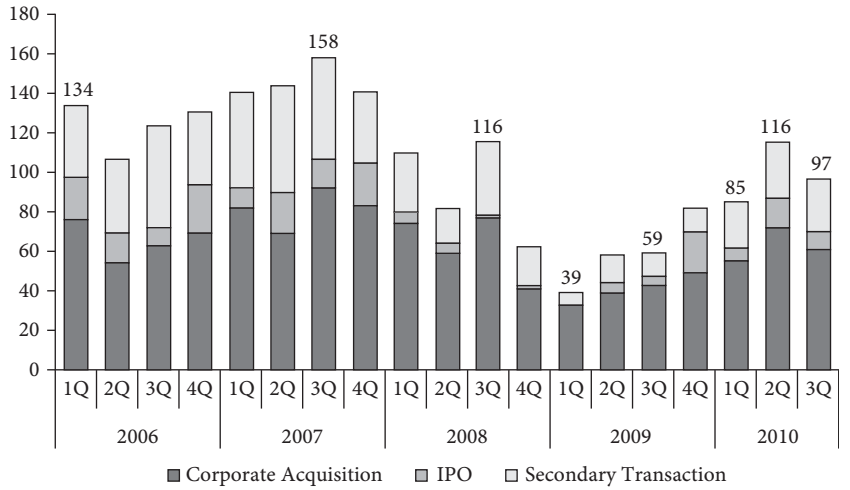

Figure I.7 Quarterly private equity exits by corporate acquisition, IPO, and secondary sale.
Source: Pitchbook, http://www.pitchbook.com/.

considers the financial effects of private equity. Part VI provides analyzes of listed private equity. And Part VII provides international perspectives on private equity.

More specifically, Part I comprises three chapters on the structure of private equity funds. In chapter 1, "The Private Equity Contract," Steven Davidoff of the University of Connecticut School of Law addresses a central question in private equity in the post-2007 financial crisis pertaining to the private equity contract, and the causes and consequences of the private equity contract over periods of financial crises. In view of the statistics presented immediately above, Davidoff`s analyses are timely and important. In chapter 2, "Direct Investments in Private

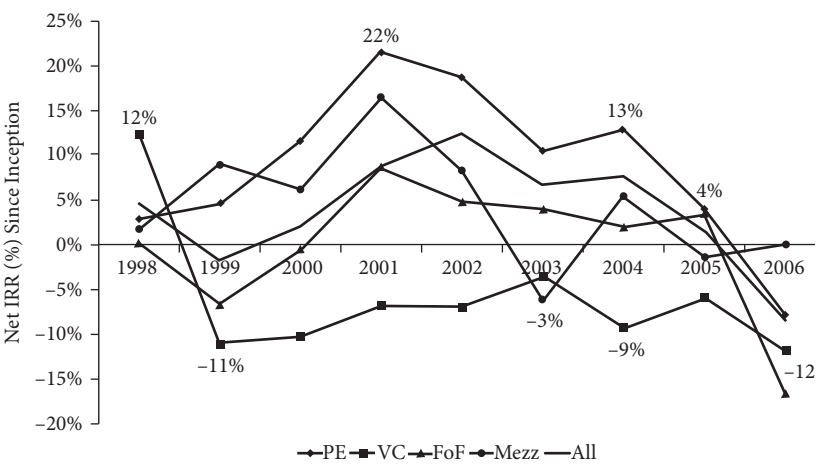

Figure I.8 Average IRRs by fund vintage year.
Source: Pitchbook, http://www.pitchbook.com/.

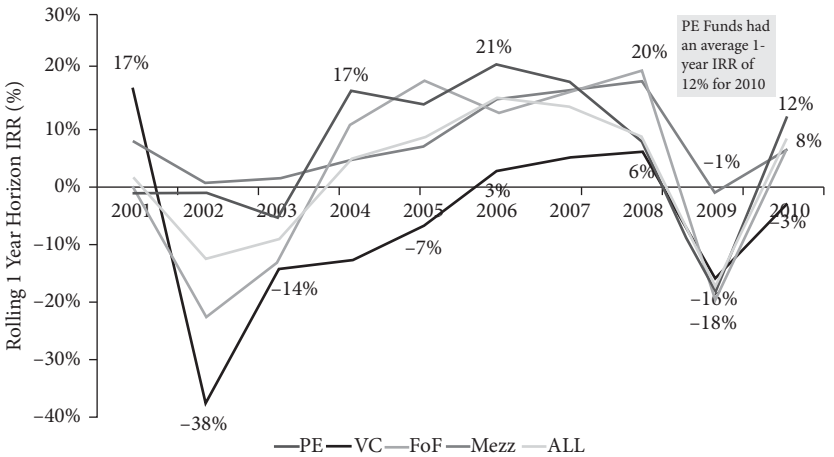

Figure I.9 Median 1-year rolling horizon IRR by fund type.

Firms by Institutional Investors: Issues and Evidence," Kasper Meisner Nielsen of the Hong Kong University of Science and Technology compares the intermediation model with funds-of-funds versus direct private equity funds versus making direct investments and presents data on the frequency of use of these different models. He shows that there are implications for the governance and success associated with the use of different private equity structures. Dodo zu Knyphausen-Aufsess of the Technischen Universität Berlin and Marc Koehnemann of Siegwerk Druckfarben AG analyze "the size and internal structure of private equity firms" in chapter 3. They document the growing size of private equity firms and examine factors that affect the size and structure of private equity funds and the consequences of such size and structure. They also consider implications for listed private equity. It should be noted that while part I focuses on the structure of private private equity

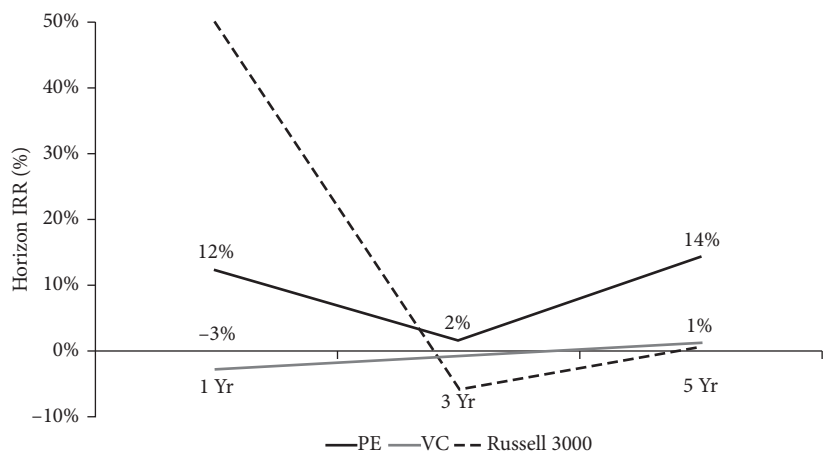

Figure I.10 Private equity, venture capital, and Russell 3000 public markets index.
Source: Pitchbook, http://www.pitchbook.com/.

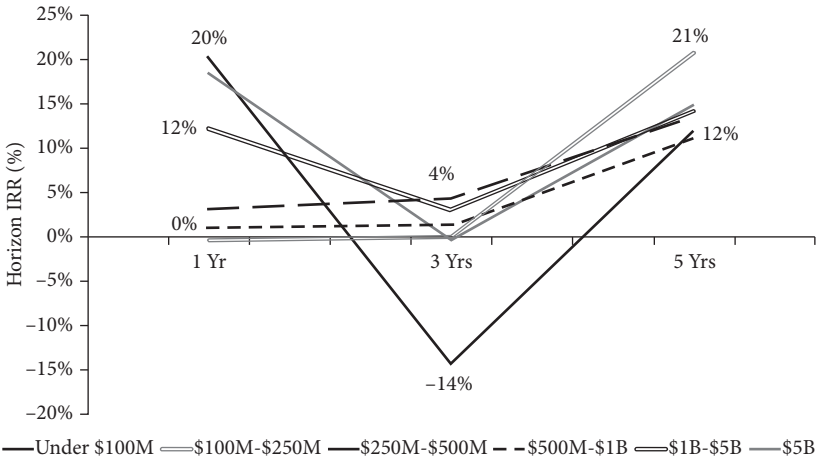

Figure I.11 Private equity horizon IRR by fund size.
Source: Pitchbook, http://www.pitchbook.com/.

funds, part VI considers more specifically the related topic of the structure of listed private equity funds.

Part II comprises three chapters focused on the structure of governance and the performance of leveraged buyouts. In chapter 4 Luc Renneboog of Tilburg University analyzes "leveraged buyouts and public-to-private transactions." Renneboog provides an in-depth analysis of the literature and data on announcement returns for public-to-private transactions. In chapter 5 Jerry Cao of Singapore Management University examines "private equity and public corporations." Specifically Cao presents an empirical analysis of reverse leveraged buyouts, the initial public offerings (IPOs) of firms that have previously been bought out by professional later-stage private equity investors. Chapter 6 by Simona Zambelli of

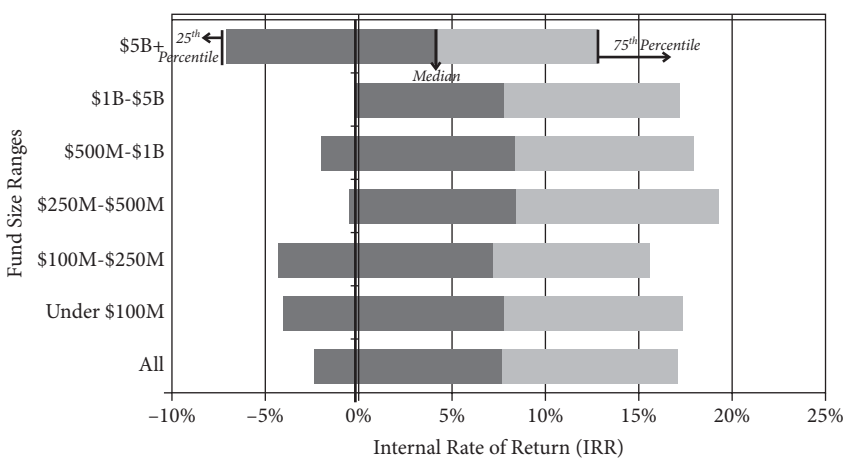

Figure I.12 IRR quartiles by fund size for mature private equity funds.
Source: Pitchbook, http://www.pitchbook.com/.

the University of Bologna analyzes the structure, governance, and performance of leveraged buyouts in Italy, which has experienced periods of strenuous regulation over such transactions and even a period prior to 2004 in which such transactions were considered illegal. Zambelli considers very detailed data of ownership structures, among other things. In a private equity deal it is not uncommon for the private equity sponsor to obtain majority control over the investee company, whereas in venture capital deals often the investor takes a minority stake (see *The Oxford Handbook of Venture Capital*; see also Cumming, 2008; Cumming and Johan, 2008, 2009).

Part III comprises three chapters that deal with private equity syndication, otherwise known as club deals. Chapter 7 by Peter Roosenboom and Bram van den Bosch of the Erasmus University Rotterdam School of Management examines the question "Who syndicates with whom?" Roosenboom and van den Bosch review the literature on private equity syndication, and then empirically examine which syndicate partners collaborate with one another, and the implications of such collaborations. Chapter 8 by Miguel Meuleman of the Vlerick Leuven Gent Management School and Mike Wright of Nottingham Business School considers "industry concentration, syndication networks, and competition in the U.K. private equity market for management buyouts." Meuleman and Wright provide empirical evidence of the effect of industry market structures on syndicate relationships. In chapter 9, "A Competition Law Analysis of Private Equity 'Club Deals,'" Faysal Barrachdi of Houthoff Buruma N.V., Amsterdam, examines how syndicate relationships in certain market structures have implications for competition policy. Barrachdi considers the legal position of private equity club deals and how should they be treated under the current European Competition Law framework.

Part IV of the *Handbook* covers issues dealing with the real effects of private equity. Chapter 10 by Joacim Tåg of the Research Institute of Industrial Economics in Stockholm provides an analysis of "the real effects of private equity buyouts." There has been significant debate over whether or not private equity deals add value in terms of creating new jobs and financially benefiting investee companies and the regions in which they operate. Private equity managers who finance buyout transactions have even been characterized by some politicians as "locusts" or "asset-strippers," and as such there has been significant debate over the need for greater regulation.[3] Restrictions and/or bans on leveraged buyout transactions have been commonplace in many European countries and Asia.[4] Hence Tåg's analysis of the real effects of private equity is important and timely. In Chapter 11, "Buyouts in Western European Countries: The Impact on Company Growth and Innovation," by Elisa Ughetto of the Politecnico di Torino studies provides a test of the ideas covered by Tåg's analysis of the real effects of buyouts. Ughetto's results show more value added for financial than real effects, and sometimes show negative effects for real outcomes. Similar to Ughetto's evidence, in chapter 12 Thomas Poulsen and Steen Thomsen of Copenhagen Business School examine Danish evidence on "the limits of private equity" likewise show that in some cases the real effects of private equity are not always desirable.

Part V is the longest in the *Handbook*, with seven chapters that cover issues to do with the financial effects of private equity. In chapter 13, "Private Equity: Value Creation and Performance," Christian Graf and Christoph Kaserer of Technische Universität München and Daniel Schmidt of the Center of Private Equity Research (CEPRES) in Munich present a comprehensive overview of the performance of private equity transactions based on an analysis of 10,328 private equity deals, among which 3,296 are pure buyout transactions. Chapter 14 by April Knill of Florida State University asks the related question "Do private equity fund-of-funds managers provide value?" That is, while Graf, Kaserer, and Schmidt study the value added provided by private equity funds, Knill studies the value added by funds of funds. Knill's results suggest that fund-of-funds managers do not perform significantly better on a risk-adjusted basis than their peers, and she therefore argues that there is not clear evidence that fund-of-funds managers are earning their fees. In chapter 15 Douglas Cumming of the Schulich School of Business at York University and Na Dai of State University of New York, Albany study "fund size, limited attention, and valuation of venture capital– and private equity–backed firms." They find diminishing performance and distorted valuations associated with larger private equity funds, and attribute these effects to limited attention of fund managers. In chapter 16, "Private Equity Investors, Corporate Governance, and Performance of IPO Firms," Igor Filatotchev of the Cass Business School, City University London, examines how well newly listed companies perform after they are sold by way of IPO, and shows how performance varies depending on governance structures. Chapter 17 addresses a similar issue for acquisition exits. Halit Gonenc of the University of Groningen and Koos Leisink of ABN AMRO Corporate Finance & Capital, Amsterdam, study "the role of private equity in private acquisitions." As with IPO exits, Gonenc and Leisink show that acquisition exit performance depends on the governance structure prior to exit as well as the terms of the exit. Chapter 18 by Mark Mietzner of the Darmstadt University of Technology and Zeppelin University and Denis Schweizer of WHU–Otto Beisheim Graduate School of Management examine a detailed data set of German publicly listed companies and analyze the short-term capital market reactions to the announcement that a publicly listed company is targeted by a private equity fund as well as the related effects for industry rivals. In chapter 20 Cécile Carpentier of Laval University, Jean-François L'Her of the Caisse de depot et placement du Quebec, and Jean-Marc Suret of Laval University compare the costs of private placements and seasoned offerings with the use of data from Canada.

Part VI covers issues to do with the structure, governance, and performance of listed private equity funds. Chapter 20 by Christopher Brown of J.P. Morgan Cazenove and Roman Kraeussl of VU University Amsterdam studies the "risk and return characteristics of listed private equity." Specifically they provide an analysis of how the structure of listed private equity differs from regular private equity, and document risk and return characteristics to listed private equity. In chapter 21, "Listed Private Equity: A Genuine Alternative for an Alternative Asset

Class," Matthias Huss of LPX GmbH and Heinz Zimmermann of the University of Basel's Center for Economic Science document the growth of listed private equity funds and provide empirical data showing the performance of the asset class. In Chapter 23 Götz Müller of the University of Witten/Herdecke and Manuel Vasconcelos of Erasmus University Rotterdam empirically study the return effects to listed private equity funds as a result of exit events of portfolio companies. Müller and Vasconcelos show, among other things, that listed private equity announcement effects are significantly positively associated with better exit events.

Part VII covers international perspectives on private equity. In chapter 23 Christian Andres of the Universität Mannheim, Andre Betzer of the University of Wuppertal, and Jasmin Gider of the University of Bonn study "buyouts around the world" and explain international differences in buyout markets across countries. Chapter 24 by Grant Fleming of Continuity Capital Partners and Australian National University and Mai Takeuchi of Wilshire Associates examines "leveraged buyouts and control-oriented investments in Asia." The authors provide a comprehensive picture of buyout activity across Asia and the governance mechanisms used in Asia to create value. Chapter 26 by Takeshi Jingu of Nomura Institute of Capital Markets Research documents the growth of China's private equity market and provides data on the structure, governance, and performance of private equity in China. Although Asia comes at the end of the *Handbook* for organizational reasons, it is certainly not the least important region. Rather one might argue that this region will become increasingly dominant and one of the most important economic regions in the world as the twenty-first century unfolds.

The complementary nature of the contributions herein highlights the quality of the authors' work. As the editor of the *Oxford Handbook of Private Equity*, I not only learned a great deal from reading all of these chapters, but I also immensely enjoyed corresponding with each of the authors and cannot express strongly enough my gratitude to each of them for their timely and excellent work.

Notes

1. Definitions of venture capital and private equity have differed over time and across countries. This definition is the typically used North American definition as of 2010.
2. http://www.pitchbook.com/; http://thomsonreuters.com/products_services/financial/financial_products/a-z/sdc/; http://www.zephyr.bvdep.com/.
3. The "locust" analogy is most widely associated with the social democrat politician Franz Müntefering from Germany. See http://en.wikipedia.org/wiki/Locust_(private_equity). See also BBC News (June 20, 2007), available at http://news.bbc.co.uk/1/hi/business/6221466.stm; "Private Equity: The Uneasy Crown," *Economist*, 2007, http://www.economist.com/finance/displaystory.cfm?story_id=8663441. In the U.S. context see also Ben Stein, "On Buyouts, There Ought to Be a Law," *New York Times*,

September 3, 2006, http://www.nytimes.com/2006/09/03/business/yourmoney/03every.html?ex=1314936000&en=6679077c5af5c4a6&ei=5088&partner=rssnyt&emc=rss.

4. Up-to-date legislative developments are available on many public websites on the Internet, including http://www.altassets.com/casefor/countries/2004/nz4561.php and http://www.altassets.com/casefor/sectors/2003/nz3097.php.

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PART I

THE STRUCTURE OF PRIVATE EQUITY FUNDS

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CHAPTER 1

THE PRIVATE EQUITY CONTRACT

STEVEN M. DAVIDOFF

The private equity industry has had a tumultuous time in recent years. During the sixth merger wave of 2004–2007, private equity dominated. In 2006, according to Thomson Reuters, the industry accounted for fully 18.58 percent of global takeover volume compared to 2.55 percent in 2000. This figure rose even higher in the United States, to 50.6 percent of announced U.S. takeover volume during the first six months of 2007. This rapid ascent was negated by an equivalent hard fall during the financial crisis. During this later time period, private equity firms struggled mightily to terminate pending transactions, acquisitions that had been agreed to prior to August 2007 but that no longer made economic sense or otherwise lacked financing. Meanwhile a credit freeze and extreme market volatility inhibited new deal origination. In 2008 and 2009 private equity, according to Thomson Reuters and Dealogic, accounted for only 3.8 and 3.17 percent, respectively, of global takeover volume. In the first nine months of 2011, private equity had recovered somewhat but still accounted for only 6.5 percent of global takeover volume, a far cry from the heady days of 2007.

Private equity's fall once again highlights the industry's need for credit to undertake acquisitions (Yago 1990). But private equity's recent travails have thrown new light onto an important aspect of private equity's unique competitive position: the private equity contract. The private equity contract is the merger agreement between the target and private equity acquisition fund or consortium of funds. This is the contract that orders the relationship of the parties during the time between announcement of the acquisition and its completion and sets forth the legal terms of the buyout.

Historically the private equity contract has been a unique document with distinct terms. This uniqueness was mainly the private equity contract's optional nature. In contrast to strategic transactions, private equity merger agreements have historically allowed for buyer optionality. In its most typical, boilerplate form, the private equity contract allowed private equity firms to effectively terminate the merger agreement for any reason simply by paying a reverse termination fee of approximately 3 percent of the transaction value (Sorkin and Swedenburg 2006).

In contrast, strategic acquisitions did not contain this optionality. During the financial crisis, many private equity firms successfully relied on the unique, negotiated language in these contracts to either terminate pending acquisitions or agree to a settlement with similar effect (see Table 1.1). In hindsight, this option proved to be quite valuable to private equity firms, as targets, again in retrospect, severely mispriced this option. The private equity industry thus greatly benefited from the terms it had historically negotiated in the private equity contract (Davidoff 2009a).

In the wake of the financial crisis, however, the private equity contract has imposed costs on private equity. Targets previously had relied on the reputation of private equity firms or, outbargained by the superior negotiating skills of private equity, agreed to these optional contracts. But in light of private equity's conduct during the financial crisis, targets became wary. Targets now typically demand contracts with less optionality (Cain et al. 2010; Marcus 2008).

This poses a problem for private equity. In the prior optional structure, financing risk was largely borne by the target. With a less optional structure, the private equity buyer becomes the bearer of the transaction financing risk. In other words, the optionality in these agreements allowed private equity firms to shift their financing risk onto targets and limit their liability to the reverse termination fee if the acquisition financing failed.

Targets now demand more completion certainty and sometimes refuse to accept an optional contract. Private equity firms, unwilling to bear this risk, are thus forced into a new choice: the private equity firm can fund these transactions with equity and finance the transaction after the fact; alternatively, private equity can bear the risk that its acquisition financing fails and be required to fund the entire transaction. Either choice limits both the size and number of transactions a private equity firm can enter into. After all, no private equity firm can self-fund a $10 billion transaction. The consequence is that private equity's failure to bridge this gap has hampered the industry from recovery after the financial crisis. This may be a societal cost as well since welfare-increasing acquisitions may not consequently occur.

This chapter examines the private equity contract and argues that it is an important part of private equity's past success. I begin by tracing the origins and development of the private equity contract and its unique structure. I then examine the effect of the financial crisis on the private equity contract, highlighting the unique role that the contract has had in the private equity industry. I also survey the failures of this contract and its capacity to hinder private equity on a going-forward basis. Here I look at empirical evidence from a draft finance article that

Table 1.1 Selected Bidder-Initiated Terminated Private Equity Transactions, August 2007 to December 2008

Ann. Date	Target	Acquirer	Reason Cited for Failure	Outcome
April 16, 2007	Sallie Mae	JC Flowers & Co.; LLC consortium	Bidders accused target of suffering a "Material Adverse Change" in business	Agreement terminated, with no fees triggered and private settlement
April 24, 2007	Myers Industries, Inc.	Goldman Sachs Capital Partners	Weak credit market conditions and/or poor performance of target	Bidders paid $35m RTF.
April 26, 2007	Harman International Industries, Inc.	Kohlberg Kravis Roberts & Co.; Goldman Sachs Capital Partners	Bidders accused target of suffering a "Material Adverse Change" in business and a breach of the acquisition agreement	Bidders purchased $400m of target convertible notes
May 16, 2007	Acxiom Corp.	ValueAct Capital; Silver Lake	Weak credit market conditions and/or poor performance of target	Bidders paid $65m RTF
May 17, 2007	Alliance Data Systems, Inc.	The Blackstone Group	Failure to obtain regulatory clearance	Agreement terminated, with no fees triggered
June 15, 2007	Penn National Gaming, Inc.	Fortress Investment Group LLC; Centerbridge Partners LP	Weak credit market conditions and/or poor performance of target	Bidders paid $225m RTF and purchased 12,500 shares of target preferred stock
June 30, 2007	BCE, Inc.	Teachers Private Capital; Providence Equity Partners LLC; Madison Dearborn Partners LLC	Failure to satisfy closing condition requiring auditor attestation of solvency	Agreement terminated, with no fees triggered; litigation pending over termination
July 2, 2007	Reddy Ice Holdings, Inc.	GSO Capital Partners LP	Weak credit market conditions and/or poor performance of target	Bidders paid $21m RTF

(*continued*)

Table 1.1 (continued)

Ann. Date	Target	Acquirer	Reason Cited for Failure	Outcome
July 12, 2007	Hunstman Corp.	Hexion Specialty Chemicals, Inc. (Apollo Management LP)	Weak credit market conditions and/or poor performance of target. Bidders accused target of suffering a "Material Adverse Change" in business	Bidders and banks paid $750m in damages and purchased $250m of target convertible notes
July 23, 2007	United Rentals, Inc.	Cerberus Capital Management LP	Weak credit market conditions and/or poor performance of target	Bidders paid $100m RTF
July 23, 2007	Cumulus Media, Inc.	Merrill Lynch Global Private Equity	Deteriorating performance of target.	Bidder paid $15m RTF
September 28, 2007	3Com Corp.	Bain Partners LLC; Huawei Technologies Co., Ltd.	Failure to obtain regulatory clearance	Agreement terminated, with no fees triggered; litigation pending over termination

Note: RTF = reverse termination fee.

Sources: Cain et al. 2010; Davidoff 2009b.

I have coauthored with Cain and Macias, "Broken Promises: Private Equity Bid Failures and the Limits of Contract," on the precrisis drivers of the private equity structure and the posttransaction adjustments to the private equity contract.

The private equity contract is ultimately only one facet in any financial crisis recovery for the private equity industry. It is unique, however, and itself subject to its own economic inefficiencies. The question going forward is how attorneys and private equity firms will react, and whether private equity itself can maintain the superior advantage the private equity contract previously provided to the industry. More basically, the questions are one of contract and bargaining: How will future parties in private equity transactions bargain and allocate financing risk? Can this risk be apportioned in an optimal and wealth-maximizing manner?

A Brief History of the Private Equity Contract

The private equity contract is largely a product of private equity's unique financing requirements. Private equity firms pervasively utilize substantial leverage to purchase public and private corporations. The firms typically borrow 60 to 80 percent of the required purchase price and obtain the remaining necessary capital from precommitted investors who provide equity for this purpose (Axelson et al. 2009). In order to enhance returns and increase the number of purchased companies, private equity firms seek to place as much debt and as little equity as feasible onto the acquisition capital structure. Private equity is therefore significantly dependent on the nature of debt financing and the availability of credit (Kaplan and Strömberg 2009). Because of this, the private equity contract has evolved over the years, driven in large measure by the type and availability of financing (Davidoff 2009a).

The Origins of the Private Equity Contract

The structure of today's private equity contract was laid in the 1970s and 1980s. It began in 1976, when Jerome Kohlberg, Henry Kravis, and George Roberts created the first true private equity firm, Kohlberg, Kravis & Roberts Co. (KKR). The trio at KKR raised the industry's first equity fund in 1978. This provided a prearranged source of committed equity capital (Baker and Smith 1998). At this time, however, debt for acquisitions was still raised on an ad hoc basis and was largely limited to secured credit financing from bank lenders. If private equity was to grow, a steady source of debt financing would be required in order to permit a larger amount of debt to be incurred for acquisitions.[1]

This source would be pioneered by the brilliant and infamous Michael Milken and the firm he worked for, Drexel Burnham Lambert. As Bruck (1989) details, throughout the 1970s and 1980s Milken and his colleagues at Drexel had been working to create a larger market for high-yield debt, often derogatorily known as junk bonds. This debt was often referred to as junk because it was either unrated or rated below investment grade and was subordinated to other senior, more highly rated debt. Historically, high-yield debt was shunned by investors and utilized by small issuers who had fewer financing choices. Milken had studied this market and found that investors in this debt had historically realized extraordinary returns. He popularized this finding and soon convinced many institutional and other investors to purchase the high-yield debt offerings that Drexel underwrote. Milken needed an even larger supply of issuers of these securities to fulfill the demand he largely had created.

In private equity, Milken found a large source: in the mid-1980s private equity acquisitions became one of the principal issuers of high-yield securities. Private equity firms during this time used traditional senior secured loans together with high-yield and other debt-type securities to increase the debt level on individual acquisitions. The additional funds provided by this high-yield financing allowed private equity firms to make larger and more frequent company purchases. It would be the nature of this debt financing, and the needs of the investment banks underwriting or originating it, that would drive the structure of private equity acquisitions. The structure most commonly used in the 1980s and the early 1990s is diagramed in Figure 1.1.

In this structure, the private equity buyout was effected by thinly capitalized shell subsidiaries—Parent and Merger Subsidiary in the diagram—set up

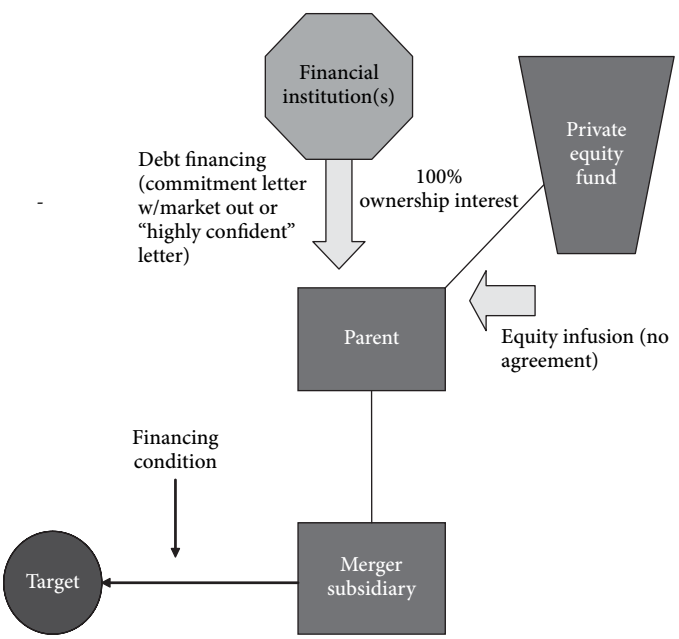

Figure 1.1 Private equity structure, 1980s to early 1990s.
Source: Davidoff 2009a.

specifically for this purpose by the private equity firm. The shells had no substantial assets of their own. Instead the private equity contract required that the shells use a measure of best efforts to complete the transactions contemplated by the agreement. Since the shells had no real assets, the company to be acquired—Target in the diagram—demanded assurances that the financing would be available. These arrangements were thus typically accompanied by a debt financing commitment letter from an investment and possibly a commercial bank—Financial Institution in the diagram.

The banks would provide senior bank credit facilities, but would also act as underwriters for selling any high-yield debt in the market and for any other related financing offering. Importantly, the debt commitment letter was not a binding arrangement to provide funds; rather it was an agreement to negotiate definitive financing arrangements on the terms set forth in the commitment letter. In addition, the commitment letter was executed at the time the acquisition agreement was executed. The final credit documentation was not signed until after the transaction was announced. The banks would then extend any loans and attempt to sell the high-yield debt to finance the acquisition at the time of the completion of the transaction.

Because there was a period between the signing of the private equity agreement and completion of the transaction, there was substantial risk for the banks. The banks had agreed to extend credit under terms set forth in the commitment letter. If market conditions changed or interest rates fluctuated in the wrong direction, the banks would still be obligated to fund under the old terms set forth in the commitment letter. In such a case, when the banks went to sell the debt issued in connection with the transaction, they might have to charge a lower price than expected when the agreements were first signed, thereby incurring a loss. In extreme circumstances, the banks might be entirely unable to sell the debt.

To address this issue, the banks typically negotiated commitment letters that contained a "market out" clause, which permitted the banks to terminate their financing obligations if market conditions deteriorated or otherwise impeded placement or incurrence of the debt. Due to the high leverage on these transactions, banks were often unwilling to provide even this level of commitment. In such circumstances, the banks would issue a "highly confident" letter. These letters were pioneered by Drexel in financings where the success of the debt issuance was too uncertain to provide any firm written commitments. The financing banks would instead opine that they were highly confident that the debt could be raised in the markets but provided no contractual agreement to do so (Bruck 1989).

In either case, though, the private equity fund itself was not liable if the transaction failed to close. Due to the uncertainty of debt financing, private equity firms refused to commit themselves in the private equity contract to fund the acquisition entirely if debt financing failed. Targets typically agreed to this demand. Since private equity firms had no contractual obligation to fund the acquisition, this effectively provided private equity firms with an ability to exit from the buyout any time before consummation of the acquisition for any reason, even beyond failure of the debt financing.[2]

The private equity contract also permitted the shell to terminate the agreement if financing was unavailable. This was accomplished by placing a financing condition in the acquisition agreement, conditioning the shell's obligation to acquire the target on the shell having obtained sufficient financing. The end result was to allocate the risk of financing failure on the target.

The Private Equity Contract in Flux

In the 1990s the private equity structure continued to evolve in response to market forces. However, these changes occurred outside the private equity contract itself. Targets began to contractually bind the private equity firms rather than rely on an agreement with shell subsidiaries. They did this by demanding and receiving equity commitment letters from the private equity firms' sponsoring funds. These letters obligated the fund to supply the shells with the necessary equity to complete the transaction. This filled the equity gap in financing these transactions, providing a contractual commitment for the shell subsidiaries to access the necessary equity component of their financing. The debt commitment letter was thus paired with an equity commitment letter. Notably this new mechanism placed the first real limitation on the ability of private equity firms to exit transactions; the equity commitment letter now contractually bound the private equity firm's fund to provide the shell subsidiary with the necessary equity investment for the acquisition. During this time period, the terms of debt commitment letters also shifted to include bridge financing. The addition of bridge financing thus provided increased certainty to the target that the transaction would be completed if the offering of any permanent debt were delayed.

The private equity contract further evolved in the new millennium. A significant shift in transaction structure was triggered by the March 2005 $11.3 billion buyout of SunGard Data Systems, Inc. by a private equity consortium. This was the largest leveraged buyout since the acquisition of RJR Nabisco by KKR in 1989. The structure of the SunGard transaction is presented in Figure 1.2.

Comporting with the prior historical structure, the equity portion of the transaction was set forth in an equity commitment letter executed by the private equity firms' funds. The debt portion of the transaction was agreed to through a commitment letter by five investment banks and included a bridge financing facility.

SunGard also negotiated the removal of the financing condition from the private equity contract between SunGard and the shell subsidiaries controlled by the private equity consortium. In addition to negotiating the deletion of the financing condition, SunGard was also able to obtain a debt commitment letter that had conditions reciprocal to those in the private equity agreement. In other words, if the conditions to the private equity acquisition agreement were satisfied, the debt commitment letter conditions would be as well. By better aligning the terms of the debt commitment letter and the main private equity acquisition

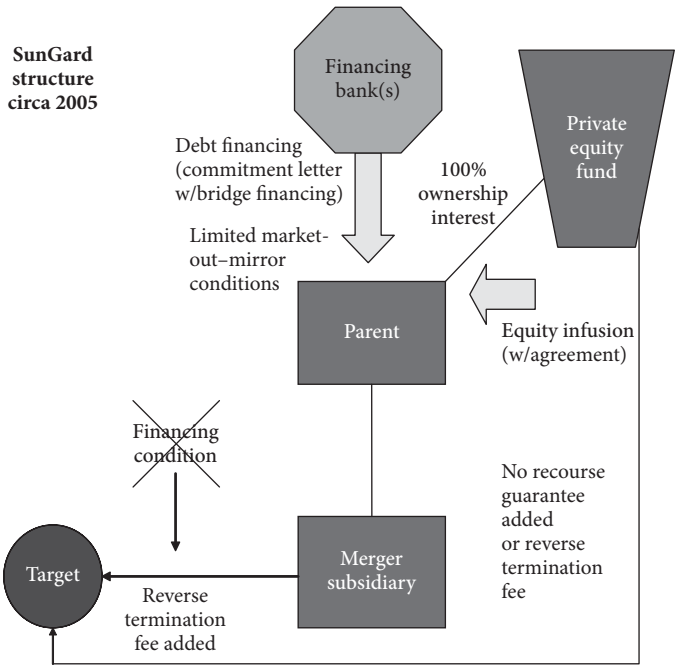

Figure 1.2 SunGard structure circa 2005.
Source: Davidoff 2009a.

agreement, the financing for the transaction was more certain to occur if the conditions in the private equity agreement were fulfilled. Finally, the SunGard debt commitment letter contained a limited "market out" and "lender out" condition. The result was a transaction structure more favorable to the target because completion was contractually more certain. Importantly, though, by agreeing to a more certain debt commitment letter and providing bridge financing, the banks now took on the risk of market deterioration between the time of signing and the time of closing. If the value of the debt declined during this time period, the banks would suffer the loss. This appeared to be a rational decision in 2005—the days of easy credit—but it would be a decision that would haunt these financial institutions.

In exchange for agreeing to the removal of the financing condition in the private equity agreement, SunGard also agreed to a $300 million cap on the private equity consortium's maximum liability for breach of the private equity agreement. In other words, if the shell was unable to complete the buyout because, for example, the financing arrangements failed or the agreement was intentionally breached, then the private equity fund's only liability was a fee of $300 million to SunGard as compensation. The fee was called a reverse termination fee because it was patterned on termination fees that targets typically agreed to pay acquirers in acquisition agreements if the target subsequently accepted a higher offer from another

bidder. The reverse termination fee in the SunGard transaction approximated 3 percent of the transaction value and equaled the termination fee. And, since the shells were still empty corporations without substantial funds, the private equity funds issued a guarantee for the payment.[3]

This type of structure had been utilized in other transactions, but not in private equity deals. The SunGard structure appears to be the first private equity transaction to employ such architecture. After SunGard the structure quickly took hold in private equity transactions. Figure 1.3 sets forth calculations as to the percentage of private equity acquisitions utilizing a reverse termination fee structure from 2005 through 2008.

Figure 1.3 shows a rapid shift in practice, as the use of financing conditions in acquisition agreements dropped in inverse proportion to the utilization of the reverse termination fee structure. The reverse termination fee became the norm in private equity agreements, but the terms sometimes varied depending on the parties' agreement. For example, in the 2005 private equity buyout of Neiman Marcus, the private equity acquirers agreed to a two-tiered termination fee. A lower fee would be paid if the private equity shell subsidiaries breached the agreement and failed to complete the transaction due to the failure to obtain financing. A significantly higher fee, phrased as a cap on the private equity consortium's maximum liability, would be paid if the private equity fund willfully breached the agreement and refused to complete the transaction when all of the conditions to completion, including financing, were satisfied. A third variation of this arrangement arose in other buyouts, such as that of Penn National Gaming, where, under the terms of the contract, the target could force the private equity shell subsidiaries to specifically perform and enforce the debt and equity commitment letters to complete the transaction. If for some reason the debt or equity financing became unavailable, then termination of the agreement and receipt of the reverse termination fee was the target's only remedy.

In its first two variations, this arrangement allowed the private equity firm to exit a transaction simply by paying the reverse termination fee. The third variation was supposed to be a more certain structure for acquires because as long as the debt and equity commitment letters were enforceable, the private equity firms could not simply "walk" on a transaction. Rather the target could go to court to force the shell subsidiaries to enforce and draw on the debt and equity commitment letters to complete the acquisition. I refer to this last form of the structure as a specific performance form of the reverse termination fee structure.

The reverse termination fee structure and its variations had rapidly become the blueprints of private equity heading into the summer of 2007. However, despite the more nuanced view of risk allocation and the binding of private equity firms more tightly to the structure as well as the elimination of some financing risk, the private equity contract in all of its variations still left the risk of financing failure on the target itself. In such a circumstance, though, the target was to be compensated with the reverse termination fee.

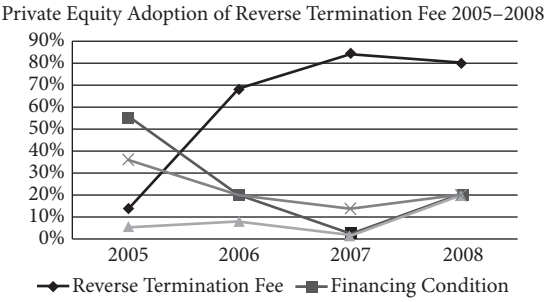

Figure 1.3 Private equity structure, 2005–2008. Information in this figure is only for announced public private equity deals for U.S. targets traded on the NYSE or NASDAQ greater than $100 million in value and for which a transaction document was available or a tender offer was launched. In addition, these data include reverse termination fees paid for other purposes, such as in the case of a failure to obtain regulatory approvals.
Source: Factset Mergermetrics Database.

The Private Equity Contract during the Financial Crisis

The First Wave of Private Equity Acquisition Failures

During August and through mid-November 2007 private equity firms in two pending public transactions with reverse termination fee structures did indeed attempt to terminate acquisitions that had been agreed to before the summer credit crisis. These transactions involved the buyouts of Acxiom Corp. and Harman International Industries, Inc. The private equity consortium acquirers, however, did not invoke the reverse termination fee provisions negotiated in their transaction agreements. Rather these private equity acquirers asserted real or ostensible material adverse change (MAC) claims to terminate their obligations.[4]

They did so for at least three reasons. First, the deterioration in the markets and general economy provided a colorable basis to make this assertion. Second, a MAC claim provided reputational cover: instead of being labeled as walking on their contractual obligations, a MAC claim provided historically legitimate grounds for an acquirer to terminate the transaction (Macias 2009). It is generally perceived as acceptable for an acquirer to invoke a MAC. Third, a MAC claim provided negotiating leverage to the private equity firm. Under the terms of each of these agreements, if the private equity firm was successful in claiming a MAC it could terminate the agreement without any required payment to the target. If their MAC claim failed, the maximum liability of the private equity funds was capped at the reverse termination fee. The assertion of a MAC in combination with a reverse termination fee provision thus provided a private equity firm with negotiating leverage by setting its maximum liability in any settlement or litigation (Davidoff 2009a).

Both of these MAC claims were ultimately settled through agreements among the parties that terminated the private equity contract. The legitimacy of these MAC claims was revealed by the amounts the private equity firms ultimately paid to the targets to terminate the transactions. In each case the payment was close to the reverse termination fee amount. Thus in the early fall of 2007 private equity firms could be seen as attempting to avoid reputational tarnish by asserting MAC claims to avoid invoking the reverse termination fee provisions. The validity of these MAC claims was belied by the amounts privately negotiated and paid by the private equity firms; the settlements approximated the reverse termination fee. The result was beneficial to the private equity firms. It may have protected their reputation, but their actions left targets publicly damaged by these claims. In most of these cases, failed transactions left the targets' stock prices trading significantly below their prices prior to the announcement of the acquisition agreement (Nowicki 2009).

The Failure of Private Equity Norms

Initially in the fall of 2007 no single private equity firm was willing to stain its reputation and harm its competitive position in the buyout market by invoking a reverse termination fee provision (Davidoff 2009a). Instead these firms asserted MAC claims to publicly justify termination and avoid being labeled as walking on their transactions and, thus, an untrustworthy future acquirer. As the fall progressed, however, the reputational forces on private equity firms to complete buyouts became diluted as the credit markets remained illiquid and the number of terminated private equity deals increased.

This dilution was prominently evident on November 14, 2007, when the private equity fund controlled by Cerberus Capital Management, L.P. attempted to terminate its agreement to acquire United Rentals, Inc. (URI). Cerberus did not assert a MAC to justify its action; rather the shell subsidiaries who were controlled by Cerberus and who were the parties to the private equity contract simply invoked the reverse termination provision in the agreement. Cerberus argued that this provision permitted it to terminate its obligations for any reason upon payment of a $100 million reverse termination fee. Cerberus had decided that any reputational impact was overcome by the declining economic return of the transaction. In assessing the reputational damage, Cerberus was no doubt influenced by prior private equity terminations and their dilutive effect on any reputational loss.

URI sued the Cerberus shell subsidiaries in Delaware Chancery Court, challenging their attempt to terminate the agreement. URI argued that the private equity contract provided that URI could require specific performance of the shell subsidiaries' obligations. In other words, the parties' dispute focused on the type of reverse termination fee structure they had negotiated: the pure reverse termination fee or the specific performance structure. URI argued that this agreement provided

for specific performance of the shell subsidiary entities' financing commitments. Only if the financing then failed could the entities terminate the agreement. The Cerberus shell subsidiaries argued that the same language of the agreement barred specific performance and that their only liability was for $100 million.

Chancellor Chandler, the judge in the Delaware Chancery Court, found in favor of Cerberus in *United Rentals, Inc. v. RAM Holdings, Inc. et al.*, 937 A.2d 810 (Del. Ch. 2007). This case was ultimately a contract dispute, and Chancellor Chandler applied standard contract interpretation principles to find the contract language ambiguous and to uphold Cerberus's reading of the private equity contract. When URI announced that it would not appeal this decision, Cerberus promptly terminated the private equity contract and paid URI $100 million.

The URI-Cerberus dispute and Cerberus's subsequent termination of their agreement resulted in a further deterioration of the reputational force preventing the exercise of a reverse termination fee provision. In the period from December 2007 through February 2008, three additional private equity transactions would be effectively terminated: the pending acquisitions of PHH Corp., Reddy Ice Holding, Inc., and Myers Industries, Inc. In each case no MAC claim was publicly asserted; instead the acquirers merely exercised the reverse termination fee provision in their agreements to exit the transaction. In each instance the agreement clearly permitted this action (Davidoff 2009a). Thus by early 2008 the fundamental understanding of the parties in private equity agreements appeared to have fallen by the wayside, and the inherent optionality in this type of a reverse termination fee structure was realized. Reverse termination fee provisions appeared to become exercisable without significant reputational impact or other external normative constraints.

The Failure of the Private Equity Contract

The economics and parameters of the pure reverse termination fee structure were largely redefined by the fall 2007 wave of collapsed private equity acquisitions. By 2008 most of these deals had either been terminated or consummated in accordance with their terms. Into the new year, however, a number of significantly larger multibillion-dollar private equity transactions remained pending. The five biggest pending private equity acquisitions were the buyouts of Alliance Data Systems, Inc., BCE, Inc., Clear Channel Communications, Inc., Huntsman Corp., and Penn National Gaming, Inc. Only the BCE and Clear Channel private equity contracts contained a pure form of the reverse termination fee structure. The remainder were structured utilizing a specific performance reverse termination fee (Davidoff 2009a).

The closing of these transactions was delayed into the winter of 2008 due to regulatory or financing issues. At the time many speculated that these deals remained outstanding in part due to their less optional structure: the provision of specific performance prevented the private equity firms from simply terminating

the agreement unless financing became unavailable. Given that the acquirers could not simply terminate their obligations, they instead waited, delaying the deal and hoping that the credit and stock markets improved sufficiently to enable completion of their transactions (Davidoff 2009a).

But as the credit crisis continued into 2008 and the economic cycle trended further downward, these transactions continued to be stressed by extrinsic shocks. The result was another wave of litigation, this time implicating the viability of the specific performance form of private equity structure. The first of these disputes occurred at the end of January 2008 and arose out of the pending sale of Alliance Data Systems, Inc. (ADS) to funds affiliated with the Blackstone Group. At that time it was disclosed that the Office of the Comptroller of the Currency (OCC) was refusing to grant a required regulatory approval for ADS to be acquired by Blackstone. The OCC justified its refusal on the grounds that the postacquisition leverage of ADS would leave ADS insufficiently capitalized to support its bank subsidiary. The OCC did, however, express a willingness to reverse its position if the acquiring Blackstone fund itself provided a backstop: a $400 million guarantee of ADS's bank liabilities effective upon completion of the sale.

On January 29, 2008, ADS sued in Delaware Chancery Court to compel the Blackstone fund to provide this guarantee. ADS had negotiated a private equity contract that provided that it could sue to force performance of the Blackstone shell subsidiaries' obligations under the agreement. This arguably included the subsidiaries' contractual obligation to use reasonable best efforts to obtain any necessary regulatory approvals, including OCC clearance, for the transaction.

ADS argued in court that the requirement to use reasonable best efforts by the shell subsidiaries required them to sue the Blackstone fund itself, their parent, to compel it to issue the OCC-requested guarantee. Blackstone countered that the language of the contract was different than what ADS claimed; specific performance was available only in the case of a financing failure. Blackstone also argued that ADS had entered into the acquisition agreement only with thinly capitalized shell subsidiaries, a fact that ADS was fully aware of at the time it entered into the agreement. The Blackstone fund's only obligation was under its equity commitment letter issued to its subsidiaries and its own guarantee of the reverse termination fee. Therefore the shell entities could not force the Blackstone fund to provide the OCC guarantee, and, since these entities could not provide the guarantee required by the OCC, the transaction could not be completed.

Blackstone's response highlighted a fundamental limitation on the specific performance form of private equity structure. The private equity shell subsidiaries are corporate limited liability entities whose only real assets are their financing commitments and agreement to acquire the target. If regulators or events require the shell subsidiaries to act beyond these assets, specific performance becomes meaningless since no assets are available. The agreement thus effectively becomes unenforceable unless the private equity fund voluntarily agrees to support any additional arrangements.

The ADS litigation ultimately exposed the limits of the private equity structure with respect to its contractual terms. A second dispute involving the sale of Clear Channel Communication, Inc.'s television station business to Providence Equity Partners (a separate transaction from the then pending private equity buyout of Clear Channel itself) would highlight the more direct difficulty of forcing shell subsidiaries to enforce and draw on their own financing commitments. The Clear Channel television station dispute unfolded during February 2008 with litigation in two jurisdictions. Wachovia Corp. sued the Providence Equity shell subsidiaries in a North Carolina court to terminate Wachovia's obligations under its debt commitment letter to finance the subsidiaries' acquisition of Clear Channel's television station business.

In addition, uncertain as to Providence Equity's commitment to the transaction, Clear Channel sued the Providence Equity shell subsidiaries in Delaware Chancery Court to force them to litigate against Wachovia to enforce their debt commitment letter and equity commitment letter. Litigation was filed in different states due to differing forum-selection clauses in the financing documents and merger agreements that selected or permitted litigation to be brought in these states. Both litigations were resolved in March 2008 with the filing of a settlement that included a reduction of the purchase price.

The Clear Channel TV station case was settled before a ruling could be issued. This left open the scope and means of any specific performance remedy against shell subsidiaries in circumstances where the private equity fund parent refused to provide additional funds. The dual litigation in the Clear Channel TV station dispute that resulted from differing forum-selection clauses in the financing documents and private equity acquisition agreement also raised the real possibility that the structure could completely collapse. In other words, not only could the private equity firm breach its equity commitment letters, but the financing banks could breach their debt commitment letters as well. This would create a situation where a target would be forced to sue the shell subsidiaries and, through some type of judicially ordered mechanism, arrange a suit on behalf of the subsidiaries against the banks and/or private equity firms to obtain necessary financing. The suits would have to be in different jurisdictions due to the differing forum-selection clauses. While a target could theoretically perform such acrobatics, the structure appeared to be collapsing under its own weight.

In the wake of the Clear Channel TV station and ADS cases, a number of other disputes arose around the private equity contract, including in the BCE and Huntsman Corp transactions. In all, the wreckage was impressive. Cain et al. (2010) find that in 2007 and 2008, 22.1 and 13.3 percent, respectively, of private equity acquisitions with a transaction value of at least $100 million—seventeen transactions in all—were terminated. None of the major private equity acquisitions referred to above completed. But it is not necessary in this chapter to review the sad details of these remaining individual failures. Rather the point is the realization the parties had come to because of these events: The private equity contract was exposed for its optionality and the costs it imposed on targets. Private equity had been able to leverage the structure and terms of the private equity contract

to repeatedly terminate its contractual obligations. Targets had been left with compensation that was far below their lost opportunity and transactions costs.

The Post–Financial Crisis Private Equity Contract

In the wake of these transaction failures, analysis of the private equity contract was principally directed at the optionality and resulting uncertainty it created (Afsharipour 2010; Davidoff 2009b). In its purest form, the reverse termination fee structure created an option. The private equity firm had the discretion to exercise this option, and, if the firm did so, it could terminate the transaction and pay the reverse termination fee. A private equity acquirer thus could assess the benefits of the transaction before completion and decide whether it was more economical to complete the transaction or otherwise pay the reverse termination fee and terminate the acquisition agreement.

Davidoff (2009a) finds that this option did not appear to be calculated according to any option pricing method. Nor did it appear to be calculated by reference to the damage incurred by a target in the event that the private equity firm exercised it. The amount ultimately paid also did not deter acquirers from exercising the option in many instances. Rather the amount of the reverse termination fee appeared normatively set by reference to the termination fee typically paid by targets, approximately 3 percent of the enterprise value. The fee was set at approximately 3 percent for both acquirer and target, making for a symmetrical penalty. Cain et al. (2010) find the reverse termination fee from 2004 to 2008 to have been an average and median of 2.8 percent of enterprise value. This compares to a termination fee of 2.7 and 2.8 percent median and mean payable by targets.

The fact that each of these penalties existed for different reasons and worked differently shows the strength of the norm in operation. The reverse termination fee provided a liquidated damages remedy equivalent to the termination fee paid by targets. This latter fee was capped by Delaware case law and was designed to deter competing bids and to compensate bidders for the costs associated with making a trumped offer. But the same principles did not apply in the reverse termination fee context (Quinn 2010). In a number of prominent instances, the fee did not deter exercise of the option, and in hindsight the amount appeared to undercompensate targets for the losses incurred by the target company and its shareholders. Evidence of this came from the posttermination share trading prices of targets against which these provisions were invoked. In the months after the exercise of this provision, the share prices of these companies traded significantly below the pre-offer price (Nowicki 2009).

Despite the seeming miscalculation of the reverse termination fee, market participants interviewed for my article "The Failure of Private Equity" (Davidoff 2009b), an earlier piece on this subject, almost all asserted that the optionality of the reverse termination fee structure was well known among lawyers and transaction participants prior to August 2007. The reverse termination fee structure also provided more closing certainty than the structure it supplanted. In the pre-2005 structure, the structure was wholly optional. The target entered into the private equity agreement with thinly capitalized shell subsidiaries, and the agreement itself contained a financing condition. If the subsidiaries refused to perform, or if financing otherwise failed, the target was left with no compensation or recourse against the private equity firms except through a veil-piercing or other creative litigation argument. The reverse termination fee structure reduced optionality in the structure by imposing a penalty on private equity firms for their refusal to complete transactions. In its specific performance form, the structure purported to ensure that the acquisition would occur if all of the conditions to completion were fulfilled and financing was available (Sorkin and Swedenburg 2006).

This level of self-awareness does not explain the rationale for this optionality. It also does not explain the heterogeneity and homogeneity of the private equity contract. The parties bargained for variation in the private equity contract ranging from a pure reverse termination fee structure, to a two-tiered termination fee that imposed a higher penalty if the private equity party simply walked from the transaction, to a third and higher level whereby the target could actually force the buyer to specifically perform the transaction. Yet in all of these variations the reverse termination fee held largely to the 3 percent norm. In addition, the transaction structure itself did not seem to be varied based on obvious variables such as bidding premiums or bidding competition.

In an attempt to further determine the drivers of the private equity contract, Matthew Cain, Antonio Macias, and I have undertaken a study of 194 private equity contracts from the period 2004 through 2009. The study, "Broken Promises: Private Equity Bid Failures and the Limits of Contract" (Cain et al. 2010) analyzes four separate hypotheses for the reverse termination fee and the structure of the private equity contract:

- *Option Hypothesis*. The reverse termination fee structure creates a real option, which is purchased by the private equity buyer at the time the private equity contract is entered into.
- *Insurance Hypothesis*. The reverse termination fee is insurance designed to compensate a target for lost transaction and opportunity costs associated with an acquisition failure.
- *Signaling Hypothesis*. The structure and terms of the private equity contract are products of signaling by the parties and a consequence of bidder competition and varying levels of bidder precommitment to the acquisition.

- *Reputation Hypothesis*. The terms of the private equity contract and variation in its terms and structure are products of attorney reputation and possible superior bargaining by attorneys as well as agency costs attorneys themselves might impose on the process.

Consistent with the anecdotal evidence, our preliminary analyses find only weak evidence for the options hypotheses and no evidence for the other three hypotheses. Regarding the options hypothesis we find that

> bidders tend to negotiate stronger termination rights for transactions involving greater amounts of debt financing, but not for transactions involving targets with greater stock price volatility or transactions with longer time to agreement expiration. Unconditionally, the termination structure is unrelated to the incidence of bidder-initiated transaction failures; yet, it strongly predicts the failures that occurred at the start of the financial crisis in 2007. Hence, it appears that private equity bidders negotiated greater downside protection into their merger agreements leading up to the market turmoil in 2007. Moreover, this structure predicts transaction failures in 2007 after controlling for arbitrage spreads, indicating that arbitrage traders may not have fully appreciated the optionality of these agreements for the bidders. Offer premiums are unrelated to the termination structure, indicating that target managers likewise failed to adequately price the shift in termination structure during the sample period. (Cain et al. 2010, 4)

The reverse termination fee amounts are negatively correlated with the incidence of bidder-initiated transaction failures in 2007, which is consistent with the real options hypothesis but inconsistent with the insurance hypothesis. This finding is in contrast to a prior paper by Bates and Lemmon (2003), which posited that, in the general takeover market, reverse termination fees served as a form of target insurance. Bates and Lemmon examined transactions in both the strategic and private equity contexts. We did not examine reverse termination fees in the strategic context, and so make this observation in the context of private equity contracts only (compare Afsharipour 2010 and Quinn 2010).

While we find that bidding competition and attorney reputation do not affect outcomes, it is quite clear that contract structure is very important for bidding outcomes. The structure predicted not only bidding outcomes in the 2007 wave of failures but also settlement outcomes. Cain et al. (2010) find that private equity buyers generally pay out 2 to 3 percent of a target's value in order to exit acquisitions with a pure reverse termination fee. Conversely private equity buyers may pay up to 10 percent or more of a target's value if the private equity contract allows for specific performance of the shell subsidiaries' financing commitments.

In my article "The Failure of Private Equity" (Davidoff 2009b) I argue that the private equity contract is a path-dependent, complex contract. Attorneys negotiate the private equity contract by following prior contract precedent. In serial iterations of this contract over time, lawyers do not fix or alter fundamental aspects of the contract to comport with the unique attributes of each transaction. Prior to the financial crisis, attorneys did so because this would signal unfamiliarity with

the private equity contract while also deviating from the reliance parties placed on private equity reputation to complete the acquisition.

Extending this theory in light of the findings of Cain et al. (2010), I would suggest a possible reason for the lack of robustness for these four hypotheses: reliance on private equity reputation. Lawyers could negotiate path-dependent, homogeneous contracts because the targets and their attorneys relied on acquirer reputation to complete the contract (Davidoff 2009a; Hill 2009). Bernstein (1992) documents how social norms can reinforce contractual obligations. In the private equity context, lawyers failed to fully negotiate the private equity contract since private equity firms, as repeat players in the acquisition process, would have substantial incentives to complete this acquisition. This allowed for a high level of transaction optionality in the private equity contract. A private equity firm's need to preserve its reputation would extracontractually serve to limit this optionality. But the financial crisis skewed these incentives, creating enormous economic incentives for private equity firms to ignore its reputational capital. Private equity's actions during the financial crisis severely damaged this reputation and fractured the prior balance. This conduct deterred targets' willingness to bear the finance risk in the private equity contract. This reputation hypothesis is supported by the findings of Cain et al. (2010) that in the 2009 private equity transactions the mean size of the reverse termination fee was 4.6 percent of enterprise value, and 30 percent of transactions allowed for target-specific performance. Compare this to the 2007 figures of 2.9 and 22.1 percent, respectively. Targets had adjusted their negotiating posture to replace the value of lost reputation.

The Future of the Private Equity Contract

In the post–financial crisis world private equity has struggled to obtain financing to complete transactions. This has led to a reliance on more expensive mezzanine financing and self-funded acquisitions. It has also led to private equity initiating and completing fewer and smaller transactions. In 2009, according to Factset Mergermetrics, private equity firms announced ten acquisitions of public U.S. companies with a value greater than $100 million. This is a spectacular fall. According to Thomson Reuters, the total value of all leveraged buyouts in 2009 was only $59 billion, barely above the value of the largest completed private equity acquisition in 2007, the $44 billion acquisition of TXU, Corp. by a private equity consortium. Private equity firms also struggled to offer competitive contractual acquisition terms. In 2008 and 2009 evidence began to appear that private equity buyers were being locked out of bidding contests because they were unable to compete with strategic acquirers in offering contractual certainty of closing (Monga 2008). Targets

were no longer willing to rely on reputation to close the optionality inherent in the traditional private equity contract (Marcus 2008; Davis and Hall 2008).

As private equity has adapted to these new circumstances, there has been an observable shift in the terms of the private equity contract (Davidoff 2009c, 2009d). An example came in the second largest private equity acquisition of a U.S. public company in 2009, BankRate's acquisition by Apax. In that transaction the reverse termination fee was eliminated altogether. Apax instead funded the entire transaction with equity financing. Apax consequently bore the entire financing risk for the transaction and financed the debt component after the transaction closing.

This was a sea change in the structure of the private equity contract. Apax Partners had adopted the strategic deal model for its acquisitions. This shift was repeated in a number of other significant private equity transactions in 2009, such as Apollo's $483 million acquisition of Parallel Petroleum Corporation and KKR Accel's $124 million acquisition of SumTotal Systems. In all, Cain et al. (2010) find that 20 percent of private equity transactions negotiated in 2009 did not contain a reverse termination fee structure, compared to 8.8 percent in 2007. This was hardly a stampede, though. The other 80 percent of private equity acquisitions contained the traditional reverse termination fee private equity contract. However, this amount was sizably increased, and the median reverse termination fee was 4.6 percent of the enterprise value. In addition, 50 percent of transactions barred specific performance, compared to 64.7 percent in 2007. Parties had adjusted their conduct to account for the diminished value of the private equity reputation.

These were all small- to middle-market transactions. The only U.S. transaction above a billion dollars announced in 2009 was a private equity consortium's $4.01 billion acquisition of IMS Health. By 2011, the market had healed somewhat. According to Factset Mergermetrics, in 2011 through December 15, there were 11 transactions announced in the United States with an enterprise value greater than $1 billion. However, only one of these transactions was worth more than $5 billion. This compares to 46 transactions with a value greater than a billion dollars in 2007, 19 of which were valued at greater than $5 billion.

By its nature private equity firms were limited in the size of transactions they could fund entirely from equity. This newly used transaction structure thus limited private equity in the nature and type of transactions it could undertake. Alternatively those targets willing to bear the financing risk and agree to a more traditional private equity contract were also largely those with fewer choices. Bidding competition in these acquisitions was limited, and many of these companies were distressed. In either case private equity firms faced limits on the nature of their acquisitions. This was evidence of the importance of the private equity contract and the advantage it provided to private equity.

In future the evolution of the private equity contract will in part determine the ability of private equity to compete for a broader range of transactions and more transactions of significant size. The healing of the credit markets will allow for

this, but targets may no longer be willing to bear financing risk in larger transactions. The filling term of reputation is no longer available. In such cases a fully equity-funded transaction is also likely not possible in larger transactions. It will thus be up to private equity and its attorney agents to innovate and reorder the private equity contract to close this contractual gap.

It will be in light of this innovation that private equity will arrange and complete future transactions and regain its capacity for substantial and numerous acquisitions. If the private equity industry sticks to form, it will once again do so to its advantage, as Bargeron et al. (2008) find private equity has done in pricing negotiations. Some of this innovation may borrow from new terms in acquisition agreements for strategic transactions, which in the wake of the financial crisis also began to shift. It will also result in higher reverse termination fee amounts and greater use of the specific performance variant of the private equity structure. Yet the same path-dependent forces that created the initial private equity structure will work to limit and define the scope of innovation. In the meantime acquisition transactions that increase social welfare may not occur. The private equity industry will continue to be hampered by the limits of the historical private equity contract.

Notes

1. The following description of the structure of private equity, and the later discussion of the affect of the financial crisis on private equity, is largely drawn from Davidoff (2009b).
2. The only real legal constraint on the private equity firm's ability to do so was a possible veil-piercing argument by the target: the shell subsidiaries were dominated by the private equity fund such that their separate limited liability should be disregarded by the courts. But this was a legal argument that was never tested in the courts during this time period.
3. The guarantee also contained no-recourse language, which purported to limit any veil-piercing argument by SunGard against the private equity firms.
4. A MAC clause is a provision in an acquisition agreement that permits an acquirer to refuse to complete the transaction if a material and adverse change, as defined in the acquisition agreement, occurs to a target prior to the time of completion of the acquisition. See generally Davidoff and Baiardi 2008.

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CHAPTER 2

DIRECT INVESTMENTS IN PRIVATE FIRMS BY INSTITUTIONAL INVESTORS: ISSUES AND EVIDENCE

KASPER MEISNER NIELSEN

This chapter focuses on an unexplored source of financing for private firms: direct investments by institutional investors. Although over the past two decades financing of private firms has been the fastest growing market for corporate finance (Fenn et al., 1997), the academic literature has focused primarily on venture capital and buyouts. The vast majority of papers deal with these types of investments, whereas few papers have analyzed alternative sources of entrepreneurial finance.[1] This is due, in part, to the difficulty of obtaining data, since data are provided mainly by specialized agencies (e.g., Venture Economics, Venture One) that tend to focus on investments by venture capital and buyout funds.

The fact that much growth is attributed to investments by funds and funds of funds has justified the academic focus on investments through funds. A recent debate, however, underscores the importance of knowing more about whether direct investments constitute an appropriate alternative to indirect investments through funds. Interest in this topic stems from the poor realized returns to investments in venture capital and private equity funds. In particular, recent research suggests that the performance gross of fees cannot justify the fees charged by funds (and funds of funds). Although private equity funds have high relative performance

gross of fees (Cochrane, 2005), the relative performance net of fees appears low (Kaplan and Schoar, 2005; Phalippou and Gottschalg, 2009). Thus rent captured by private equity funds is probably excessive and raises questions about why investors allocate large amounts to funds, given funds' historically poor performance (Phalippou and Gottschalg, 2009). The poor performance could eventually spell the end of the private equity funds if institutional investors—the main contributors to funds—can invest directly in private equity. The real driving force for direct investments lies in the opportunity to make private equity–like returns without having to pay high management fees: typically, a 1 or 2 percent management fee and 20 percent of returns. Thus, going forward, the central question might well become whether institutional investors are capable of managing investments in private firms.

Today there exist a variety of approaches to equity investments in private firms: direct investments, co-investments alongside specialized investors, indirect investments through limited partnerships, and indirect investments through fund of funds. Figure 2.1 provides an illustration of the difference.

If institutional investors allocate capital through fund of funds (a), the fund of funds will commit the capital to around fifteen to twenty underlying funds, which then invest in typically ten to twenty private firms. Alternatively, capital can be allocated directly to the fund, which invests (b). Co-investment occurs whenever institutional investors commit capital to a fund and invest directly in one of the fund's portfolio firms (c). Finally, direct investments are those cases in which institutional investors take a direct equity interest in the private firm (d).

In this chapter "indirect investments" refer to investments made through funds or fund of funds, as contrasted with "direct investments," in which institutional investors make the investment decision.[2] Table 2.1 summarizes the advantages and disadvantages of each investment style.

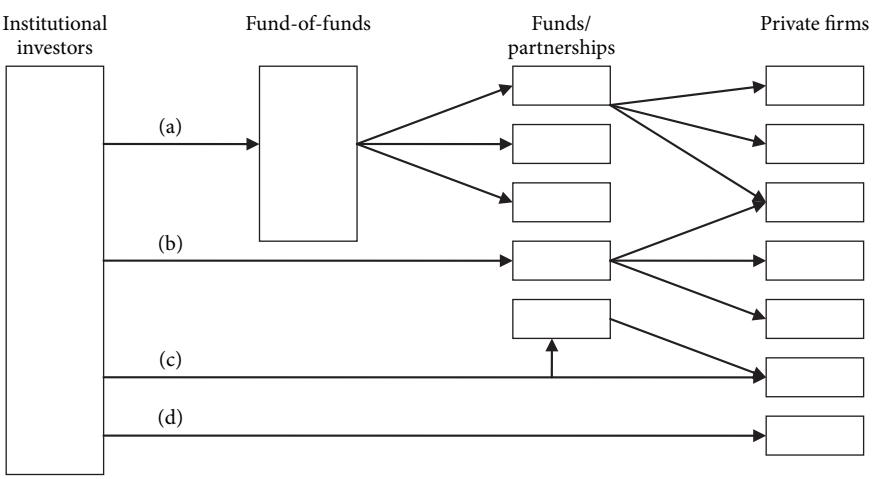

Figure 2.1 Approaches to equity investments in private firms.

Table 2.1 Differences between Investment Styles

Investment Style	Advantage	Disadvantage
Fund of funds	Diversification in both levels	Need for staff or advisors to select the fund of fund
	Underlying fund managers take positions on the board and help professionalize and restructure the firm	Substantial fees on both levels ("fee-on-fees")
Funds	Diversification	Need for staff or advisors to select the funds
	Fund managers take positions on the board and help professionalize and restructure the firm	Substantial fees
Co-investments	Reduces fees while benefiting from fund managers interaction with management	Little direct influence and control over investments Large exposure to a single investment
Direct	Full control over investments	Requires very substantial funds to achieve an adequate spread of investments Cost and commitment: need for substantial permanent specialist staff

Direct investments give institutional investors ownership and control over investments, but also require much stronger in-house resources. Institutions making direct investments have to oversee the process of acquiring, managing, and divesting assets. Such transaction costs are likely to be fixed and therefore require relatively large investment programs. In contrast, indirect investments allow for smaller investments and a higher degree of diversification. However, little or no control is exerted over assets, and substantial fees need to be paid to the managing partners. Thus for most small and medium-size institutional investors, direct investments might not be achievable, whereas direct investment might be realistic for larger pension funds.

Another difference between direct and indirect investments relate to potential agency problems in fund management. Reported returns from limited partnerships are subject to reporting bias, in particular when investor protection is poor (Cumming and Johan, 2007; Cumming and Waltz, 2010) and the investment style might drift away from the original investment mandates (Cumming et al., 2009). Agency problems at the fund level provide another incentive to make direct investments, although proponents often point to the fact that institutional investors' in-house investment programs provide insufficient incentives for their staff to maximize the risk-return trade-off. That is, institutional investors might also suffer from agency problems when they manage their direct investments.

The academic literature argues that direct investments are a priori inappropriate for institutional investors. For example, Lerner et al. (2007) argue that the bulk of institutional investment in private equity is done through funds because institutions lack the intensive relationship and due diligence skills needed to directly select the appropriate private equity investments. Moreover institutions appear to have insufficient resources to intensively monitor a portfolio of private firms. Whereas these obstacles are likely to limit direct investments by institutions, this claim might not be universally true. In particular, direct investments by institutions might be absent only in high-tech, high-growth firms that attract venture capital literature, because investments in such firms require more information and expertise than do investments in the average private firm (Nielsen, 2008). Instead, for a majority of private firms, institutional investors might be an appropriate direct source of financing—a role that, to my knowledge, is unexplored by the literature.

The rest of this chapter is organized as follows. The following section provides evidence of direct investments in private firms from around the world. I then discuss the pertinent issues surrounding direct investments by focusing on evidence from Denmark on the return to direct investments in private firms and anecdotal evidence from the United States, including two cases, from Kansas and Connecticut, of in-state direct investment programs. I then offer concluding remarks and suggest topics for further research.

Evidence of Indirect Investments around the World

On the financing side, venture capital and private equity literature has shown that institutional investors and, in particular, pension funds are the primary financing source of limited partnerships. More than half of annual fundraising in the United States in the 1990s was sourced from institutional investors (Gompers and Lerner, 2000). In European countries, institutional investors account for one-third of the contributed capital to venture capital funds (Bottazzi and Da Rin, 2002; EVCA, 2008). Despite these large investments in venture capital, we have only a limited understanding of the channels that institutional investors use to provide entrepreneurial firms with financing. Evidence is scant on the extent to which institutional investors, in addition to making large indirect investment through funds, invest directly. In the following subsections I provide evidence on whether institutional investors invest directly in private firms in Australia, Canada, Denmark, the Netherlands, the United Kingdom, and the United States. The survey focuses on pension funds because, as the main contributors to limited partnerships, these funds have large commitments to private equity. To identify the scope of direct

investments, I examine annual reports for any evidence indicating that the investment strategy includes direct investments. I focus on five or ten of the largest pension funds in each country based on Watson Wyatt's (2006) annual survey of the three hundred largest pension funds in the world.

Australia

In Australia pension funds have committed capital to private firms through traditional venture capital and private equity funds as well as direct investments in infrastructure projects. Infrastructure projects include airports, ports, railways, and toll roads. Because infrastructure investments are generally unlisted investments in regulated industries, they classify as a special type of direct investment in private firms.

Table 2.2 shows the total net assets, the allocation to private equity (including infrastructure investments), the strategy, and the scope of direct investments by five of the largest pension funds in Australia.

Commitments to private equity account for between 4 and 13 percent of the net assets of pension funds in Australia. Investments are largely indirect investments through funds, with the exception of infrastructure investments for two

Table 2.2 Scope of Direct Investments by Five of the Largest Pension Funds in Australia

Pension Fund	Total Net Assets (bn AUD)	Private Equity Allocation (bn AUD)	Strategy	Scope of Direct Investments
Future Fund	66.2	2.4	Indirect investments	NA
State Super	28.8	3.7	Indirect investments	NA
Australian Super	27.5	4.4	Indirect investments	NA
UniSuper	21.8	2.0	Direct and indirect investments	Direct investments in infrastructure portfolio companies account for 35% of the private equity allocation
QSuper	23.4	2.4	Direct and indirect investments	Direct investments in infrastructure portfolio companies

Note: Private equity includes infrastructure investments.

Source: Annual reports from 2009.

funds. UniSuper and QSuper invest directly in infrastructure portfolio firms with the assistance of investment managers. One example of such an investment occurred in 2009, when QIC, one of QSuper's investment managers, acquired a 15.5 percent interest in Brisbane Airport on behalf of QSuper. The investment is expected to generate stable returns for the longer-term benefit of QSuper pension savers through the airport's forecasted growth in passenger numbers and capacity for expansion. Another direct investor in private infrastructure projects is UniSuper, which manages a 2 billion AUD private equity portfolio of which 35 percent is invested directly into infrastructure portfolio companies. UniSuper's direct investments in infrastructure portfolio companies include airports in Adelaide, Brisbane, and Sydney, toll roads in Australia and Texas, and electricity and water supply utilities. The venture into infrastructure projects and the direct investment policy adopted by some pension funds suggest a larger role for direct investments in the future because pension funds in Australia are encouraged by the government to increase their allocation to such investments.

Canada

Pension funds in Canada have a long tradition of actively managing their investments in private equity. While most American investments in private equity are indirect through limited partnerships, such funds account for only 25 percent of the Canadian industry (Macdonald & Associates, 2004). The smaller Canadian share is partly due to the preference of some Canadian institutions active in the market to invest directly rather than focus exclusively on committing capital to external pools. To provide evidence on the investment strategy of institutional investors, Table 2.3 surveys the scope of direct investments by ten of the largest Canadian institutions. For each institution, Table 2.3 reports total net assets, the allocation to private equity, a summary of its investment strategy, and the scope of direct investments. The information is collected from the pension fund's annual report from 2009 and thus provides the status of the investment strategy at the end of 2009.

Table 2.3 shows that allocations to private equity are substantial in Canada. The portfolio weight varies between 3 and 15 percent, with an average of 7 percent. Of note, moreover, is the finding that six of the ten largest pension funds in Canada, by size, manage private equity programs that invest directly in private firms. Ontario Teachers Pension Plan (OTPP) has the largest portfolio weight on private equity (15 percent), of which 60 percent is allocated to direct investments. In total, OTPP has made more than three hundred direct investments in private firms over the past two decades. A direct investment program of similar magnitude is run by CDP Pension, whereas Alberta Revenue, British Columbia Investment Management Corporation, CPP Investment Board, and Ontario Municipal Employees Retirement Systems all follow a strategy that include direct investments, co-investments, and indirect investments through funds. Thus over

Table 2.3 Scope of Direct Investments by Ten of the Largest Pension Funds in Canada

Pension Fund	Total Net Assets (bn CAD)	Private Equity Allocation (bn CAD)	Strategy	Scope of Direct Investments
CDP Capital	131.6	12.7	Direct and indirect investments through funds	More than 500 direct investments to date
CPP Investment Board	123.9	18.0	Co-investment and indirect investments through funds	NA
Ontario Teachers Pension Plan (OTPP)	96.4	10.0	Direct and indirect investments through funds	Direct investments account for 60% of the private equity allocation. More than 300 direct investments over the past 20 years
British Columbia Investment Management Corporation (BCIMC)	74.5	2.8	Direct and indirect investments through funds	Private equity investments in 156 firms and 66 fund managers
Alberta Revenue (AIMCO)	70.0	2.9	Direct and indirect investments through funds	Current portfolio includes 15 direct investments and commitments to 22 funds
Ontario Municipal Employees Retirement Systems (OMERS)	48.4	4.9	Direct and indirect investments through funds	Direct investments account for 50% of the private equity allocation

(*continued*)

Table 2.3 (continued)

Pension Fund	Total Net Assets (bn CAD)	Private Equity Allocation (bn CAD)	Strategy	Scope of Direct Investments
Hospitals of Ontario Pension Plan (HOOPP)	31.1	1.5	Direct and indirect investments through funds	NA
Ontario Pension Board	14.3	NA	NA	NA
Ontario Public Service	13.4	0.7	Co-investments and indirect investments through funds	NA
New Brunswick Investment Management Corporation (NBIMC)	7.0	0.2	Co-investment and indirect investments through funds	Co-investments account for 15% of the private equity allocation

Note: Private equity includes infrastructure investments.

Source: Annual reports from 2009. Reported numbers are end of year.

the past two decades Canadian pension funds have managed significant direct investments in private firms.

Denmark

In Denmark institutional investors have invested for more than a decade directly in private firms. Using unique ownership data for the population of private firms, Nielsen (2008) shows that institutional investors have invested in 1 percent of all Danish firms. Table 2.4 shows the distribution of firms and the presence of institutional investors in each year from 1996 to 2003. The table also shows the total number of firms, the number of firms with an institutional investor among the owners for all private firms, and private firms excluding firms operating within financial intermediation and real estate. The latter subsample allows us to understand the scope of direct investments by institutional investors beyond their core business area. For comparison, Table 2.4 also reports the average level of institutional ownership of public firms listed on Copenhagen Stock Exchange.

Panel A in Table 2.4 reports the number of institutional investments per year. Institutional investors have invested in between 337 and 434 firms, corresponding to approximately 1 percent of all private firms in Denmark. When financial intermediaries and firms in real estate are excluded, the number of direct investments varies between 251 and 297 out of between 25,000 and 30,000 firms. These investments correspond to around 2.5 percent of all assets of nonfinancial private firms when we weight by book value of assets. Table 2.4 also shows that from 1996 to 2003 the direct institutional ownership share of private equity decreased slightly from around 2.8 to 2.3 percent. As a benchmark, institutional investors' share of the total market value of (domestic) nonfinancial firms listed on the Copenhagen Stock Exchange varies from 19 to 32 percent over the same period. Part of this decline is due to increasing foreign investments—in both private and public firms. Significantly the direct institutional ownership share in the market for private equity is markedly smaller than for public equity. This difference highlights the importance of agency, liquidity, and transaction costs for institutional investors.

Panel B in Table 2.4 shows a breakdown by industries for 1999. Industry classifications are provided by Venture Economics to make the descriptive statistics comparable to prior venture capital literature. Interestingly most direct investments are not made in industries where venture capitalists are normally active (i.e., computer-related and research and development–intensive industries). Instead institutional investors have the highest ownership stake in research and development and energy companies. Research and development mainly covers firms working with the biotechnological section, whereas energy among more traditional utilities includes the windmill industry. Panel B also reports ownership at the industry level. Institutional ownership share is highest in research and development, with 15.2 percent of the assets. Thus when we value-weight the investments, institutional investors have the highest ownership share in industries that

Table 2.4 Institutional Investors' Direct Investments in Private Equity, 1996–2003

Year	All Private Firms			Nonfinancial Private Firms			Public Firms
	N	Firms with Institutional Investments		N	Firms with Institutional Investments		%
		N	%		N	%	
A: Number of firms and institutional investments by year							
1996	32,790	374	1.1	26,951	269	2.8	29.7
1997	34,889	363	1.0	27,976	261	2.9	27.6
1998	36,461	337	0.9	28,274	251	2.5	31.9
1999	39,121	386	1.0	28,700	265	2.5	29.4
2000	40,452	394	1.0	27,733	274	2.6	27.4
2001	42,542	423	1.0	28,393	293	2.3	25.4
2002	43,606	434	1.0	29,285	297	2.2	23.1
2003	47,538	414	0.9	31,861	266	2.3	18.8
B: Number of firms and institutional investments by industries in 1999							
Communications	151	2	1.3	151	2	1.3	
Computer-related	712	18	2.5	712	18	2.5	
Other electronics	250	2	0.8	250	2	0.8	
R&D	33	10	30.3	33	10	30.3	
Medical and health	1,097	3	0.3	1,097	3	0.3	
Energy	20	2	10.0	20	2	10.0	
Consumer products	10,742	45	0.4	10,742	45	0.4	
Industrial products	2,173	25	1.2	2,173	25	1.2	
Transportation	1,498	7	0.5	1,498	7	0.5	
Other industries	22,445	272	1.2	12,024	151	1.3	
All	39,121	386	1.0	28,700	265	0.9	

Notes: This table depicts the level of direct investments in private equity by institutional investors in Denmark from 1996 to 2003. *All firms* is the population of private firms with limited liability in Denmark, whereas *nonfinancial firms* excludes the financial firms that operate within two-digit NACE-industry codes 65, 66, 67, and 74 (i.e., financial intermediation and real estate). For public firms, the level of institutional ownership is reported to facilitate a comparison. Panel A shows the total number of firms, both private and public, and the number of firms with institutional investments from 1996 to 2003. Panel B breaks the investments in 1999 down into industries. I use the industry classifications provided by Venture Economics.

Source: Nielsen 2008 and author's calculations.

also attract venture capitalists (Gompers and Lerner, 2001). More strikingly, an evident correlation appears in the pattern of investments across industries in public and private equity.

Perhaps the most important take-away from Table 2.4 is the total size of institutional investments in private firms. Because of the size of this market, these direct investments are significant. In 2003 the book value of the institutions' direct investments in nonfinancial firms was 2.4 billion euros. In comparison, the Danish venture capital and buyout funds, in total, had 2.2 billion euros under management in 2003 (Vækstfonden, 2003).

Note that banks and pension funds dominate the distribution of institutional investors by type of institution. Private equity investments are mainly held by pension funds, which account for around 50 percent of the institutions' total private equity investments reported in Table 2.4. Banks come second, with a share of total investments of around 37 percent. Thus direct investments in private firms have been an integral part of the portfolio of pension funds.

Direct investments in Denmark have been pioneered, in particular, by the two large public pension funds ATP and LD. ATP is among the ten largest pension funds in Europe, whereas LD is among the three hundred largest pension funds in the world (Watson Wyatt, 2006). ATP was established in 1964 but, until 1994, was not allowed to invest in private firms. LD, however, has, since its establishment in 1980, been an active investor in private firms. To date LD has invested in more than 350 private firms while maintaining a portfolio of around sixty private investments on average. Several other large pension funds have also maintained a high exposure to private firms through direct investments.

Table 2.5 shows descriptive statistics on the number and the size of pension funds in Denmark from 1995 to 2004. The population of pension funds in Denmark in the sample period has consisted of between fifty-four and sixty funds.

In 1995 the average pension fund had Danish kroner (DKR) 11.1 billion, or euro (EUR) 1.5 billion under management. By 2004 the value of the portfolio had increased to DKR 24.7, or EUR 3.3 billion. Pension funds had, on average, DKR 1.6 billion (EUR 214 million) invested in public firms listed on the Copenhagen Stock Exchange and DKR 188.0 (EUR 25.2) million invested in privately held firms in 1995. By 2004 these sums had risen to DKR 1.9 billion (EUR 251.1 million) and DKR 260.3 (EUR 34.9) million, respectively. In 2004 the total assets of pension funds in Denmark equaled DKR 1,331 (EUR 179) billion—equivalent to 92 percent of GDP. More interestingly, the total market value of public equity investments was DKR 89.8 (EUR 12.1) billion, compared to DKR 11.2 (EUR 1.5) billion for private equity. As a percentage of the total domestic equity investments, the pension funds' private equity investments' average share decreased from 15.9 percent in 1995 to 8.7 percent in 2000, but then increased to 26.5 percent in 2004. However, as evident from the reported market value of private equity, this change was mainly due to fluctuations in stock prices, whereas the underlying allocation to private equity was relatively constant.

Table 2.5 Pension Fund Investment Assets in Denmark, 1995–2004

Year	Pension Fund Investment Assets								
	All		Public Equity		Private Equity				
	N	Market Value	N	Market Value	N	Market Value	% Equity Allocation	% Direct	% Indirect
1995	55	11139.1	49	1594.5	39	188.0	15.9	94.3	90.4
1996	55	12561.0	51	1729.8	38	186.7	14.4	93.4	89.0
1997	55	14357.9	52	2252.6	38	174.3	13.6	91.4	86.5
1998	57	15931.9	56	2828.5	36	211.4	12.6	89.1	84.0
1999	60	16455.0	53	2978.7	36	206.6	10.9	85.9	80.5
2000	60	18923.1	53	3433.8	38	242.8	8.7	84.3	77.9
2001	60	20325.1	54	3292.4	44	259.8	15.4	82.2	75.5
2002	59	20842.1	54	2594.4	45	253.1	22.5	80.8	73.8
2003	58	20905.7	51	1663.1	43	268.4	28.1	81.8	76.4
2004	54	24663.8	48	1871.2	43	260.3	26.5	79.2	75.8

Note: This table provides descriptive statistics on the size of pension fund investment assets. The sample consists of all pension funds in Denmark from 1995 to 2004. I report the number of pension funds and the mean market value of all investment assets and domestic investments in public and private equity. In addition, I report the average share of total equity investments allocated to private equity and the share of private equity investments that are direct and indirect through funds. All market values are in million DKR. The exchange rate of DKR to EUR is 7.45.

Source: Nielsen 2011 and author's calculations.

Finally, Table 2.5 shows that the bulk of pension fund investment in private firms consisted of direct investments rather than investments through funds (or funds of funds). The share of investments allocated through the two investment channels is calculated by weighting the investments with book value of assets, as market values of assets are unobserved for private firms. Although the share of direct investments declined from 95 to 79 percent between 1995 and 2004, the typical investment by pension funds in Denmark remained direct investments. At the same time, pension funds have increased their allocation to foreign private firms mainly through indirect investments.

The Netherlands

Using a comprehensive survey of institutional investors in the Netherlands, Cumming and Johan (2007) provide evidence of substantial direct investments in private equity. Their survey asks one hundred Dutch institutional investors about their current and future private equity allocations. The majority of respondents are pension funds (56 percent), followed by insurance companies (25 percent) and

financial institutions (19 percent). The average institutional investor has 4.8 billion euros under management, of which 1.1 percent is allocated to private equity. The average private equity allocation is thus equal to 52 million euros.

More interestingly, Cumming and Johan (2007) ask the institutions about their investment strategy. On average, direct investments account for 20 percent of the current allocation to private equity, whereas indirect investments through funds and funds of funds together represent around 40 percent. Substantial variation appears to exist across institutional investor types. Pension funds have invested 8 percent of their current allocation directly, whereas insurance companies and financial institutions have invested 24 percent and 27 percent, respectively.

Going forward, the survey also reveals that the Dutch institutional investors intend to continue the current strategy, which includes direct investments in private firms. The allocation to direct investments is expected to stay constant at around 20 percent. Pension funds expect to allocate less directly (6 percent) compared to insurance companies and financial institutions, who expect to increase the allocation to direct investments to one-third of the private equity portfolio. Thus Dutch pension funds appear to be committed to direct investments in private firms.

Sweden

Pension savings in Sweden are dominated by large occupational and public funds. The largest pension fund, Alecta, has been an occupational pension fund since 1917 and currently manages 470 billion SEK in savings on behalf of 1.8 million private individuals and 30,000 corporate clients. Only a small fraction equivalent to 0.5 percent of Alecta's net assets is contributed to private equity through indirect investments. The second largest pension fund, AMF Pension, does not invest in private equity, whereas the public pension funds AP Fonden 1, 2, and 3 all have substantial funds invested in private equity. The portfolio allocation varies between

Table 2.6 Scope of Direct Investments by the Five Largest Pension Funds in Sweden

Pension Fund	Total Net Assets (bn SEK)	Private Equity Allocation (bn SEK)	Strategy	Scope of Direct Investments
Alecta	470.7	2.6	Indirect investment	NA
AMF Pension	282.8	0.0	NA	
AP Fonden 3	206.5	9.8	Indirect investments	NA
AP Fonden 2	204.3	21.4	Indirect investments	NA
AP Fonden 1	181.4	9.2	Indirect investments	NA

Source: Annual reports from 2009. Reported numbers are end of year.

5 and 10 percent percent, with a long-term target of 10 percent. All these funds pursue private equity investments through funds. Thus among large pension funds in Sweden, it is uncommon to invest directly in private firms (see Table 2.6).

United Kingdom

In the United Kingdom the growth in the private equity market over the past decade is largely attributable to the emergence of private equity limited partnerships that raise and invest funds from investors. About 80 percent of private equity investments flow through specialized intermediaries, almost all of which are in the form of limited partnerships. The remaining 20 percent is mainly invested directly in firms through co-investments. I have conducted a survey (unreported) of ten of the largest pension funds in the United Kingdom. Although all ten funds have substantial allocations to private firms, none of them pursued an investment strategy that included direct investments. Thus direct investments do not appear to be an integral part of their investments in private firms.

United States

Historically, direct investments in private firms have played a significant role in the United States. Direct investments in the United States are a product of the 1970s, when state pension assets grew dramatically. Interest groups and politicians saw these funds as mechanisms for achieving socially and politically desirable objectives. As a result public pension funds began favoring investments that would foster political goals such as economic development. By-products of this focus were the in-state investment programs that targeted local investments in venture capital and private firms.

In the early 1990s more than 20 percent of all investments in private firms were made directly by institutional investors (Fenn et al., 1997). Large public pension funds typically allocated between 2 and 5 percent of their total investment assets to direct or in-state investments. For instance, CalPers has historically allocated about 2 percent of its assets ($1.6 billion) directly into private equity, although its current strategy relies exclusively on funds and funds of funds. TIAARCE has historically managed a direct investment program of similar magnitude, and state retirement systems and public pension funds in Alabama, California, Connecticut, Georgia, Kansas, New Jersey, New York, Maryland, Michigan, Missouri, Pennsylvania, Rhode Island, and Virginia have all promoted in-state investment programs varying in size from 2 to 5 percent of total investment assets, or three-digit million-dollar figures. These programs allocated investments to private firms within the state. Similarly state pension funds in Oregon and Washington manage significant co-investment programs, in which they invest directly in private firms alongside private equity funds. According to a survey of private equity institutional investors

in 1999 by Goldman Sachs and Frank Russell, 7 percent of public pension funds invested through funds of funds, 52 percent use an advisor or gatekeeper, and 14 percent invest directly in private companies.

The emergence and growth of specialized financial intermediaries has, however, limited the scope of direct investments, and today only a few pension funds in the United States have retained their direct investment programs. A recent advisory report by Technology Alliance (2007) provides an excellent catalogue of current state programs for venture capital investments. Among the handful of states that still manage direct investment programs are Georgia, Maryland, Michigan, Missouri, and Rhode Island. Another reason for this dramatic change is that direct investment programs received negative press in the past as a result of low returns and some high-profile failures; I examine these circumstances in the following subsection.

Other Countries

Evidence from other countries is scant, partly because of lack of access to data and annual reports. Coverage in the business media, however, reports evidence of direct investment by some of the largest institutional investors in Germany, Switzerland, and Turkey.[3] An article in the *Financial Times* publication *FT Mandate*, for instance, mentions that direct investments account for 13 percent of the private equity allocations of Swiss institutions. The majority of these direct investments are in local private firms. Apart from these few isolated examples, media coverage of investments in private equity typically focuses on indirect investment through funds and funds of funds. Perhaps this focus has more to do with the marketing efforts of funds and active portfolio managers than with the frequency of direct investments.

Issues with Direct Investments by Institutional Investors

A major concern is whether institutional investors possess the intensive relationship, due diligence skills, and sufficient monitoring resources needed to directly select the appropriate private equity investments. Returns provide the most direct test of whether institutional investors can be successful with direct investments. In this section I therefore review the existing evidence by focusing on the return to institutional investments in private firms.

Return to Direct Investments: Evidence from Denmark

Denmark provides striking evidence of the challenges institutional investors face with direct investments. In Denmark institutional investors have long invested directly in private firms. From 1995 to 2004 approximately 250 to 300 private nonfinancial or real estate firms had institutional investors as direct owners (Nielsen, 2008). Pension funds account for more than half of these investments.

Interestingly features of the pension system in Denmark resemble those of most developed countries. State retirement benefits are supplemented with benefits from public pension funds as well as from private arrangements. In the early 1990s negotiations between labor market parties led to substantial improvements in the coverage of private pensions. As a result most Danes contribute by default a fixed percentage of their monthly wage to an occupational pension fund.

As documented earlier, the average pension fund in Denmark has allocated between 1 and 2 percent of its portfolio to direct investments in private firms. The investment programs are typically managed by a small in-house staff, which undertakes the investment decision and the monitoring of the investment. Thus the Danish evidence provides the perfect laboratory for testing whether pension funds possess the ability to manage a portfolio of direct investments. If pension funds face important obstacles to investment in private equity, we should expect a significant underperformance of these direct investments in private firms.

In a recent study Nielsen (2011) estimates the return to direct investments in private firms in Denmark. Returns are hand-collected from pension funds' annual reports, where funds are obliged to report the return to various asset classes. The advantage of this data is that all pension funds are subject to the same regulation; returns are thus comparable across funds. Moreover pension funds are unlikely to report misleading returns because they are externally audited and governed by the pension savers. The findings are summarized in Table 2.7.

Table 2.7 shows that the average annual return to private equity over the period from 1995 to 2004 was 5.52 percent, using equal weights on each pension fund.

Table 2.7 Return to Direct Investments in Private Firms by Pension Funds in Denmark

	Average Annual Return (%)					
	Public Equity		Private Equity		Difference	
	N	Mean (std. dev.)	N	Mean (std. dev.)		*P*-value
Equal-weighted	340	13.148 (19.55)	340	5.523 (22.74)	**−7.625*****	[0.000]
Value-weighted	340	13.148 (19.55)	340	8.328 (21.32)	**−4.820*****	[0.000]

Notes: This table reports the average annual abnormal return to private equity investments by pension funds in Denmark from 1995 to 2004. I include only pension funds with private equity investments for all years within the period. I use a standard mean comparison test to evaluate whether public and private equity provided identical returns. I report the difference and the *p*-value that emerge from the test of comparable means. *** denotes significance at the 1 percent level.

Source: Nielsen 2011.

However, the pension funds and their investments in private equity vary in terms of size. Thus when we value-weight, using the average reported market value of private equity within the year, the estimated average annual return to private equity increases to 8.33 percent.

More interesting, Table 2.7 reports the return on the market index on the Copenhagen Stock Exchange. Over the same period, the market index returned 13.15 percent per year on average. Thus, assuming equal risk, the pension funds' direct investments in private firms had a negative abnormal return of 7.63 percent per year over the ten-year period. When we value-weight, the abnormal return is –4.82 percent. Using a standard mean comparison test of whether the returns on the market index and private equity are identical, we reject the null hypothesis at the 1 percent level. Thus the return to direct investments in private firms has been significantly lower than the average return to public equity.

One important caveat to the evidence reported in Table 2.3 is that it fails to risk-adjust the abnormal returns. However, Nielsen (2011) does provide a risk-adjusted estimate of the performance of private equity. In particular, a conservative assumption risk assessment shows that the investments in private firms have an average portfolio beta of 0.9. Consistently the average equal-weighted (value-weighted) expected return decreases to 12.14 percent (12.25 percent) per year. However, the risk-adjusted gap in returns between private and public equity is still economically and statistically significant: using equal weights, pension funds' private equity returns lag as much as 6.62 percentage points per year, whereas with value weights, the gap in returns equals 3.92 percentage points per year. These differences are statistically significant at the 1 percent level.

In sum, the evidence presented by Nielsen (2011) suggests that direct investments are not suitable investment alternatives to indirect investments through funds, provided that futures fees are adjusted to reflect a more reasonable rent sharing. However, the evidence does not preclude a role for direct investments in the future. One of the main disadvantages of the investment model applied by pension funds in Denmark is that it fails to provide adequate incentives for fund managers to maximize the return on the investments. In an attempt to achieve a better investment outcome, pension funds in Denmark have—in the wake of the poor realized return—attempted to establish in-house private equity funds wherein fund managers invest alongside the pension funds. In the process the fund managers become exposed to the risk and potential upsides. It is too early to know whether this model will solve pension fund issues.

What Can Go Wrong: Lessons from the United States

The experience of Kansas Public Employees' Retirement System (KPERS) illustrates the difficulties faced by direct investments in private firms. In 1983 Kansas governor John Carlin promoted the use of investments by KPERS, the pension fund for certain employees of the state of Kansas, to stimulate the Kansas economy.

A stimulus package written into a law obliged KPERS to invest 10 percent of its funds locally. Political influence over the pension fund did not stop there: in August 1985 the governor appointed local a businessman, Michael Russell, chairman of KPERS's board of trustees.

One of the first investments under the new Kansas Investment Funds was the decision to invest in subordinate debt of Home Savings Association, an ailing financial intermediary based in Kansas City. Home Savings had recently been purchased by a group of investors with personal relations to Russell. An initial investment of $25 million in December 1985 was followed by another $50 million in the fall of 1986. The investment in Home Savings turned out to be a poor investment decision. When federal regulators in 1991 closed Home Savings, KPERS lost a principal investment worth $65 million.

Other large investments in local private firms under the Kansas Investment Funds also proved unsuccessful. For example, investments of $14.5 and $9 million in Tallgrass Technologies, Inc. and Sharoff Food Service Inc., respectively, were lost. KPERS also invested $7.8 million in Christopher Steel, which became worthless when the steel plant soon after went bankrupt. In total KPERS faced losses of at least $138 million from its direct investment program. Moreover more than seven hundred Kansas residents lost their jobs as a result of these failures—a striking contradiction to the stimulus purpose of the Kansas investment program.

In hindsight the lack of professional oversight by KPERS of its private investments program was blamed for the failure of the direct investment program. In addition, the investment advisors were accused of benefiting themselves, and a series of legal actions followed, which collectively led to the recovery of at least $70 million. Despite these substantial losses, KPERS returned to private equity as an asset class in 1997 after a six-year break. However, the investment model had changed significantly. In particular, KPERS and the State of Kansas repealed its in-state investment mandate and prohibited direct investments. After this change, KPERS implemented a policy that allows only direct investments in companies through partnerships with the assistance of specialized independent advisors. KPERS also took measures to increase reporting requirements on private equity performance. In addition, KPERS reduced political influence on the board (by reducing the number of board members appointed by the governor from seven to four) and increased and professionalized the in-house staff responsible for private equity investments.

An almost parallel story occurred in Connecticut in the 1990s. In 1990 the treasurer of Connecticut, Francisco Borges, directed the State of Connecticut Trust Fund (CTF) to invest $25 million in Colt Manufacturing in an effort to save jobs in the state. Despite the intentions and the support of CTF, Colt went bankrupt in 1993, and CTF lost most of its initial investment. Today, as a result of the failure, direct investments are no longer part of the investment strategy. Rather CTF uses an internal staff to select private equity partnerships and funds of funds.

In summary, the cases from Kansas and Connecticut raise questions about the desirability of direct investments by pension funds. However, the two cases

also tell a story of how political influence and political preferences led public pension funds to invest in failing firms in an attempt to stimulate the local economy. Thus whether these cases provide evidence that pension funds should avoid direct investments is not entirely clear. Nevertheless the cases do suggest that a public fund needs a knowledgeable internal staff to closely monitor its advisors and partnership investments.

Conclusion

In this chapter I attempted to document the scope of direct investments by institutional investors and the pertinent issues related to such investments. Perhaps surprisingly, given the findings of prior literature, direct investments appear relatively common in Australia, Canada, Denmark, and the Netherlands. The survey of pension funds also indicates that pension funds are likely to increase their commitments to direct investments in infrastructure projects. We expect this outcome for two reasons. First, the need for investment in infrastructure continues to grow, and private-sector financing for such projects has developed. Given the long-term growth and (potentially) stable cash flows characteristic of infrastructure investments, pension funds have expressed interest in increasing their exposure to this asset class. Second, the current financial crisis has constrained governments financially around the world. To support the development of important infrastructure projects, politicians are likely to encourage pension funds to increase their allocation to private firms within the sector.

As the importance of direct investments by institutional investors increases, we need to expand our understanding of the merits and limitations of direct investments. Because institutional investors can invest in private equity either directly or indirectly through funds, two interesting questions for future research arise: What determines the desirability of one channel over the other in each circumstance? and Should institutional investors play a more active role in the firms in which they have invested directly? Answering these questions could be key to improving our understanding of the role and scope of direct investment across industries and countries.

Notes

1. Exceptions are Wong (2010), who studies angel finance, and Nielsen (2008), who focuses on direct investments in private firms by institutional investors. See Denis (2004) for a survey of entrepreneurial financing sources.
2. Note that investment through funds (b) often are referred to as direct investments in the popular press.

3. "Pension Funds Bypass Private Equity Houses," *Financial Times*, November 7, 2005; "Boost for Private Route," *FT Mandate*, February 2006.

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CHAPTER 3

THE SIZE AND INTERNAL STRUCTURE OF PRIVATE EQUITY FIRMS

DODO ZU KNYPHAUSEN-AUFSESS AND MARC KOEHNEMANN

Private equity firms—buyout as well as venture capital firms—are still not very well understood (Gompers and Lerner, 2004; Metrick and Yasuda, 2010). In this chapter we highlight two peculiarities that distinguish these firms from other business firms in general and in the professional services sector in particular.

One peculiarity is size. There is a widespread belief that business firms as well as the overall economy must show positive growth rates in order to satisfy shareholders and to compensate for productivity advances. Firms that stagnate in their growth are usually seen to be in a crisis. In contrast, private equity (PE) and venture capital (VC) firms are often surprisingly small in terms of their organizational size, even after existing for a long time period and with a successful track record. This implies that economies of scale are limited and growth is not a top priority for those firms. There is a need to understand and explain this difference in firm size and growth expectations.

The other peculiarity has to do with the private limited partnership (LP) model that those firms, in line with many other professional service firms (von Nordenflycht,

2007), typically employ (see Gompers and Lerner, 2004). In this model the capital being invested in PE-backed companies is sourced from private and institutional investors who commit capital to funds with limited lifetimes (e.g., ten years), in contrast to the approach of many other companies that tap capital markets for (re)financing. Several buyout firms, such as Blackstone and the Fortress Investment Group (Gogineni and Megginson, 2010), have found their way to public capital markets, but the legal constructions of these firms are still such that private fundraising is of central importance for their business models. For venture capital firms, public listing still seems to be highly unusual. Moreover, recent evidence suggests that the modernization of the limited partnership form offers substantial contracting benefits for investors and is crucial to the operation of a mature venture capital market (McCahery and Vermeulen, 2004). Again, there is a need for explanation.

Both topics are interrelated. As we will see, the size argument concerns the organization in terms of the number of its investment managers. However, in contrast to the organizational size of the companies, the capital employed by these companies, that is, the funds under management, has risen dramatically in recent years, with several players managing in excess of $1 billion. While increasing funding requirements typically coincide with fundraising from public sources via the stock market in other industries, this route seems to be of limited relevance in the private equity sector. This characteristic can be illustrated particularly with respect to private equity companies that provide early-stage financing, that is, venture capital firms.

The structure of this chapter is straightforward. First we analyze patterns of firm size and highlight two arguments concerning why buyout as well as venture capital firms usually remain tiny boutiques even after a relatively long lifetime. Then we turn to the going-public topic and search for arguments for why public listing may not be a preferred means of fundraising, in particular for venture capital firms that were the focus of our research.

Patterns of Firm Size and Their Explanation

Measuring Size

To analyze size patterns, we must first define our understanding of the size of private equity firms.[1] One commonly used parameter in the context of private equity is the capital under management as used in studies by BenDaniel et al. (2000) and Anson (2004). To limit the impact of the age of the companies, we focus on the size of the most recent fund raised rather than the total capital managed, as

one measure of firm size. (Older funds usually do not require as much attention from investment managers as the most recent funds do.) A second and even more important measure in the context of our research question is the size of the organization. We follow the proposition of Thomas et al. (2001) and use the number of investment professionals in a firm.

To obtain a better understanding of the actual size patterns in the private equity sector, we compiled a database using data from the 2003 edition of Galante's Venture Capital Directory from Asset Alternatives, as well as from the 2003 membership directory of the European Private Equity & Venture Capital Association (EVCA). Our database comprises all independent, private partnerships with funds of limited lifetime that have a subsidiary either in the United Kingdom, France, or Germany, the three most important European countries in terms of fundraising and portfolio investments in 2003. Hence, our research includes both partnerships active in venture capital financing (e.g., investing in start-ups; 58 percent of our sample) as well as partnerships active in buyout financing (i.e., investments in mature companies; 35 percent). We label private equity firms simultaneously active in both segments "generalist partnerships" (7 percent). We validate the data of those two directories by our own research based on information from the companies' websites as well as from press articles. Our database comprises 118 firms, 16 of which we exclude from the final analysis due to incomplete or inconsistent data. Six of the remaining 102 private equity firms are fund families that manage two or more funds in parallel, each fund separately run by a dedicated management team. For the purpose of our analysis, we counted each of these funds as an individual record. Our final database comprises 118 managed funds employing a total of 1,926 investment professionals managing a cumulated fund volume of the most recently raised funds of U.S.$225 billion.

On average, the most recent fund raised was U.S.$823 million, ranging from $10 million for the smallest to $5.5 billion for the largest fund. Figure 3.1 shows that

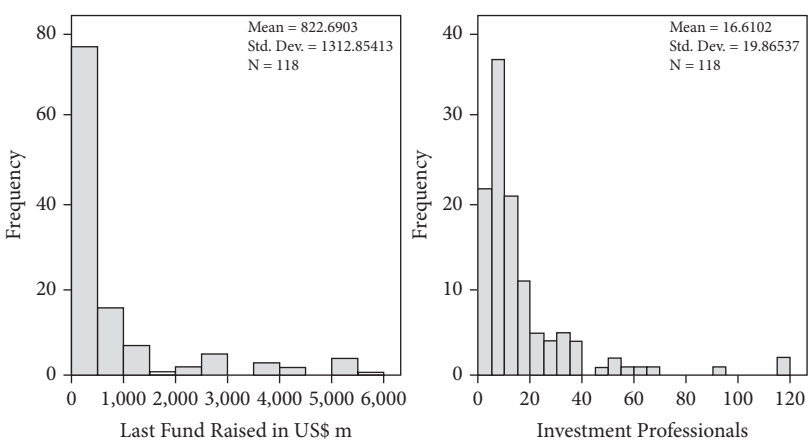

Figure 3.1 Frequency distribution regarding fund size and number of investment professionals, 2002.

we can attribute the relatively high average to a small number of megafunds with fund sizes well above $1 billion. Therefore, 50 percent of the companies managed funds smaller than $260 million.

We observe a similar pattern for the size of the organization. With an average of seventeen investment professionals, ranging from 2 to 118 professionals, 50 percent of the firms in our database employ fewer than ten professionals, 75 percent fewer than seventeen. This observation confirms our initial statement that from an organizational perspective, private equity firms are in fact tiny investment boutiques (Metrick and Yasuda, 2010). We might argue that private equity firms are relatively small due to the immaturity of the sector as a whole, since institutional private equity did not develop until the late 1970s. Indeed we find a moderately positive correlation between both the age of the companies and the size of the fund ($r = 0.496$), and the age of the companies and the size of the organization ($r = 0.569$), as observed in other industries (Evans, 1987). However, we observe that a strikingly large share of established private equity firms (i.e., older than ten years) remain relatively small in terms of the size of their organization. Of the companies in our sample that were founded more than ten years ago, 52 percent have fewer than the arithmetic mean of seventeen investment professionals. Therefore we investigate whether there might be other factors that influence the size of private equity firms.

In their study of U.S. private equity firms, Covitz and Liang (2002) find that buyout firms manage funds on average four times the size of venture capital firms, which is consistent with recent results by Metrick and Yasuda (2010) and data from the VentureXpert database for 1993–2005. We might assume that such a size difference between different financing stages also applies to the size of the organization. In fact, our sample exhibits a strong positive correlation ($r = 0.774$) between the size of the organization and the fund volume. Controlling for age as a determinant of firm size, we analyze the size patterns of the fifty-six firms in our sample with an age of more than ten years. Distinguishing between venture capital firms, buyout firms, and generalists, we find significant size differences between firms of different financing stage focus. Although venture capital firms have, on average, fund volumes of $308 million managed by twelve investment professionals, buyout firms not only have much larger funds ($2.08 billion), but also have more than twice the organizational size (twenty-six investment professionals). Generalists are by far the largest firms, with an average fund volume of $2.529 billion and sixty-nine investment professionals (see Figure 3.2).

The differences in fund volumes between firms that invest in young companies (venture capital) and those that invest in established companies (buyout) can be attributed to the higher valuations and larger underlying operations of established companies compared to start-ups. These differences may also have implications for the fund volume that is managed by each investment professional. On average the buyout investment professionals of the companies included in our study manage $79.5 million, as opposed to $25.6 million for venture capital firms and $36.8 million for generalists, yet the reasoning above does not account for the observed differences

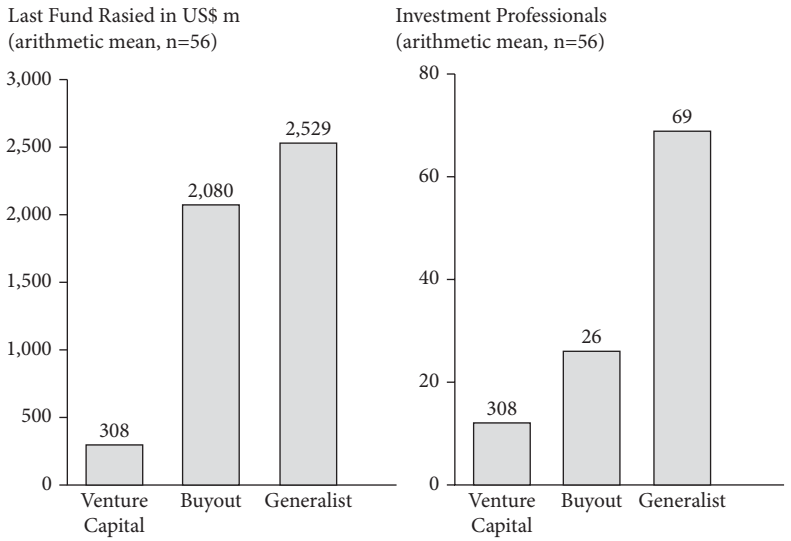

Figure 3.2 Size of private equity firms by investment-stage focus.

in the size of the organization between venture capital, buyout firms, and generalists. Although fund sizes might be larger due to the higher financing needs of established companies, there is no apparent argument for why venture capital firms have, on average, smaller operations than buyout firms or generalists.

Our data can be compared to data from other sources. Metrick and Yasuda (2010) report for their sample of mainly U.S.-focused private equity funds raised between 1993 and 2006, that buyout funds have an average size of $1.238 billion, compared to $322 million for venture capital (VC) funds, both of which are quite different from the much larger VentureXpert database that reports mean values of $492 million and $126 million for buyout and VC funds, respectively, for the period of 1993–2005. Focusing on Metrick and Yasuda's own database, it is interesting to see that their mean values show a much bigger difference from our values with regard to buyout than to VC funds. Since our data are for 2002, which was toward the end of the time period Matrick and Yasuda have data for, it can be assumed that buyout funds have grown considerably in size, whereas VC funds did not. The cyclical character of the private equity industry must certainly be taken into account when interpreting this difference (Kaplan and Strömberg 2009).

Toward an Explanation of Size patterns

How can we explain the observed size patterns? Metrick and Yasuda (2010, 2337) argue that for buyout firms it is easy to apply the same skill set to $1 billion companies as to $100 million companies, which "is in sharp contrast to the VC business. VC funds invest by definition in small firms, with typical valuations in the tens of

millions. Their goal is to hold these firms until they are mature enough to have an exit value of $150-$200M or more. The VC skills that are critical in helping firms in their developmental infancy are not applicable to more mature firms that are ten times larger and already in possession of core management skills. So when successful VC firms increase the size of their fund, they cannot just scale up the size of each firm they invest in without dissipating their source of rent." In line with this finding, we want to make two observations.

First is the insight that the scalability of a business model increases with the degree of standardization of the services provided. When individual client solutions can be translated into standardized services, they can be applied to multiple projects, thereby enhancing the efficiency of the company. Moreover, standardization allows replicating such services by delegating them to extra employees who are hired and trained to perform those standardized tasks. A typical example of such standardization in professional services is the sector of systems integration services where companies with several thousand employees emerged. One well-known example of such a company is Accenture.

To investigate the level of task standardization and delegation in more detail, we conducted additional research on selected private equity companies of our database, such as Apax Partners, Atlas Venture, Permira, and Warburg Pincus. In total we conducted twenty-three interviews with partners and nonpartner investment associates of eighteen private equity firms. To validate the findings of our interviews, we reviewed more than four thousand press articles and screened Internet sources and company publications. We have aggregated our research findings by conducting a cross-company comparison (Eisenhardt, 1989, 1991).

Our first observation is the rather low degree of delegation in private equity in general. The leverage of the companies we investigate rarely exceeds three nonpartner investment professionals per partner. For example, Apax Partners, a leading generalist private equity firm founded in 1972 that employs 117 professionals, operates with a leverage of 2.3. The buyout firm Permira, which was set up in 1985, has a leverage of only 1.3, employing a total of 65 professionals. Atlas Venture, which can look back on a venture capital history of more than twenty-five years, has 34 professionals with a leverage as low as 0.9 (all figures as of October 2003).[2] Moreover, these figures illustrate a second observation on the differences between private equity companies that focus on different stages of firms' development. Venture capital firms not only have smaller organizations; they also seem to exhibit a lower leverage, that is, a lower degree of task delegation, compared to buyout firms or generalists.

Taking these observations as a starting point, we analyze the operations of private equity firms. An analysis of the partitioning of tasks between partners and nonpartners shows that private equity partners are heavily involved in the daily operations of a private equity firm. They not only engage in the acquisition of new projects; they also spend a significant part of their time conducting due diligence, as well as monitoring and supporting portfolio companies. The private equity firms unanimously emphasize that due to the characteristics of the tasks performed,

a high degree of involvement of the partners in the operational business is required. To a great extent, the private equity business requires individual judgments that are based on long-standing operational experience. Such know-how is implicit in nature and therefore cannot be codified or easily transferred (Polanyi, 1966, 14). As Nonaka (1994) points out, implicit knowledge is context-specific and resides in the respective individual. Its transfer requires close interaction between the individual who possesses the knowledge and its recipient. Therefore the transfer of implicit knowledge is complex and time-consuming (Kogut and Zander, 1992).

Considering the type of knowledge required to perform tasks in the private equity business, we can argue that it limits the degree of delegation to nonpartner professionals with a lower level of experience. The knowledge transfer requires intensive coaching, which is limited by the capacity constraints of an individual partner. This reasoning, for example, is a main rationale for Warburg Pincus, a global "generalist" founded in 1966, to limit the ratio of partners to nonpartners to one to one.[3]

Moreover, a difference in the ability to codify knowledge enables us to explain the differences between venture capital and buyout firms. Because the speed of transfer of knowledge decreases with a decreasing ability to codify and standardize the knowledge (Kogut and Zander, 1992), partners in venture capital firms might have a lower coaching capacity than would their counterparts in buyout firms, since the knowledge required might be more implicit in nature. In fact, one characteristic of venture capital investments is a high level of uncertainty with limited available data on which to base the assessment of an investment (Gompers and Lerner, 2001, 21–47). When Atlas Venture invested in Systemonic, a German technology company focusing on integrated circuits, the responsible partner based his assessment of the investment on the perception of the abilities of the founder and on a vague idea of the quality of the entrepreneur's invention. Despite the lack of objective data, based on his long-standing experience in the IT sector the partner felt comfortable investing in Systemonic. Moreover, the companies we interviewed rate implicit knowledge as being extremely important for venture capital investments in particular.

Although implicit knowledge is considered important for buyout investments, a company assessment in this sector is often based on the track record of an established management team and on the quality of a proven product technology (Elango et al., 1995). Further, an assessment of buyout investments includes additional aspects that rely on more explicit knowledge, such as legal, accounting, or tax issues. As practiced by the buyout firm Permira, such knowledge can be transferred to less experienced professionals through formal training. In addition, the scope of tasks to be performed in buyout investments is typically far larger than in the venture capital context, due to the longer history and larger size of the portfolio companies. Thus the delegation of tasks to less experienced professionals can occur to a greater extent in buyout firms than in venture capital firms.

The specific characteristics of the tasks might not only explain the differences in the size and leverage ratio of private equity firms of different financing stage

focus, but might also provide insights on the size differences of professional services firms in general. Indeed, the leverage ratio seems to be one indicator that differentiates between the degree of standardization of the services of different professional services industries. Figure 3.3 ranks leading players of different professional service industries according to the number of professionals, as well as the industries' respective leverage ratio. Of these companies, the accounting firm PricewaterhouseCoopers, which employs more than 96,000 professionals, is not only the largest company in terms of professionals, but also exhibits the highest leverage, 11.4. The management-consulting firm McKinsey & Company employs approximately 6,200 professionals with a partner leverage of 5.9, and the law firm Baker & McKenzie has some 3,000 professionals with a leverage of 4.2.[4] In contrast to such megafirms in professional service sectors, private equity firms seem to have not only much smaller organizations, but also a significantly lower leverage ratio.

A second explanation for the observed size patterns may have to do with decision-making processes. Although the characteristics inherent in the tasks discussed above might limit the degree of delegation, this fact does not necessarily imply that it limits the size of a private equity firm per se. Other than growing by delegation, a company might increase the size of its group of partners. Therefore we analyze whether hiring additional partners might affect the decision-making process and hence the size of a private equity firm.

A central element of the decision-making process in private equity is the investment decision, which has been the focus of numerous studies, mostly in the venture capital context, with fewer in the buyout context. A number of authors suggest phase models that describe the investment decision as a rather linear, well-structured, and "rational" process (e.g., Tyebjee and Bruno, 1984; Fried and Hisrich, 1994; Boocock and Woods, 1997). However, this picture has been questioned by studies that go into the details of those phases. For example, Fried and Hisrich (1994), Muzyka et al. (1996), and Kaplan and Strömberg (2004)

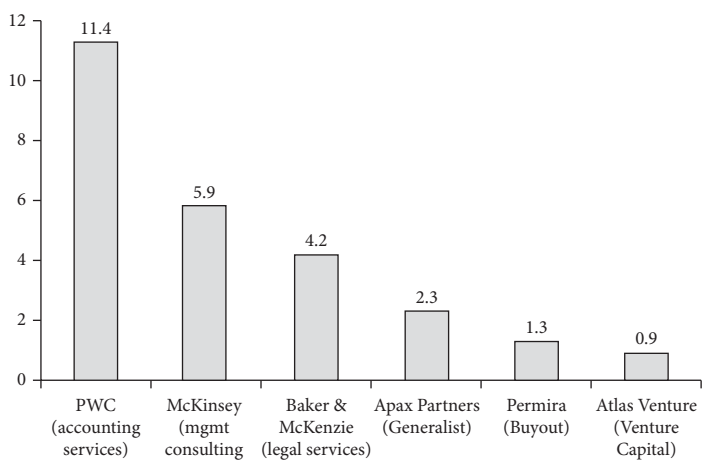

Figure 3.3 Leverage of selected professional services firms.

have shown that VC firms typically apply only a small number of those decision criteria that the normative literature suggests are sound. Information overload urges the investment managers to eventually rely on their "gut feeling" instead of going through complex decision procedures (Khan, 1987; Hisrich and Jankowicz, 1990). This finding may lead to the conclusion that investment managers' experience is an important ingredient for "good" decisions. However, Shepherd et al. (2003) show that very experienced VCs tend to rely too much on their intuition and routines, and therefore may be less successful than medium-experienced VCs; in short, they are overconfident in their abilities, and this overconfidence has a negative effect on the accuracy of their decisions (Zacharakis and Shepherd, 2001). Zacharakis and Meyer (1998) conclude that the often-stated rationality of VC decision-making processes is a myth, and that VCs have every reason to improve their understanding of this process, since many investments do not provide a satisfactory return.

While the studies mentioned discuss criteria of investment decisions as well as the order of decisions to be taken, the link to organizational processes is missing. In our research we find that the private equity firms included in our sample—venture capital firms, buyout firms, and generalists—have a similar decision-making process in their basic structure, one that resembles those reported in other studies of private equity firms (Wright and Robbie, 1998; Lerner, 2000). A team of investment professionals in charge of conducting due diligence on a specific investment opportunity prepares an investment memorandum that is presented to an investment committee. Here the deal is discussed and open questions are readdressed to the due diligence team until all issues are sufficiently clarified. Then the committee makes its investment decision.

Since a significant portion of a partner's compensation in a private equity firm is linked to the total performance of the fund (Sahlman, 1990, 494–499), the partners participate in the success or failure of each investment. For that reason, investment committee members have a strong incentive to discuss a deal intensively as well as to make a joint investment decision (Lerner, 2000, 130). Because the formation of an individual's opinion requires to a great extent the exchange of implicit knowledge, intensive informal discussions are required between committee members. The private equity companies in our study emphasize that these discussions allow them to address critical issues early on in the investment-decision process and to improve the overall quality and efficiency of the process. In contrast, because of the complex nature of the investment decision, formalized decision rules are regarded as inappropriate. Further, due to an increasing number of informal bilateral discussions, adding new partners to the investment committee also increases the complexity of the decision-making process. The private equity companies consider that when decision makers cannot sufficiently exchange their views on particular investment decisions, the investment committee acts as a bottleneck that ultimately limits the size of the firm.

The bottleneck argument also holds true when we consider not only the investment decision, but also the provision of nonfinancial assistance that is seen as an

important part of the "value-added" that private equity companies have to offer (Sahlman, 1990). Partners tend to stay highly involved in this assistance; otherwise they cannot ensure that the investment project will achieve the results on which they have based the investment decision. Cumming (2006) provides evidence for the theoretical proposition that there is indeed a trade-off between VC assistance to entrepreneurial firms in the VC's portfolio and the size of the portfolio. Considering the growth of the business, we might argue that once the workload of supporting portfolio companies exceeds the capacity of the partner group in place, additional investment projects could be handled by hiring additional partners. However, enlarging the partner group would again make the decision-making process more complex.

Our findings are substantiated by research on the optimal size of investment committees. In a formal model, Gjolberg and Nordhaug (1996) compare the marginal coordination costs of additional committee members with their marginal benefit, that is, that a committee will come to a "correct" decision. These authors point out that the number of bilateral discussions in a committee equals n(n–1)/2. This fact means that the number of communication channels and the marginal decision costs increase exponentially with the size of the investment committee. Moreover, game theory studies on committee decision making suggest that the quality of a committee decision decreases with an increase in the size of the committee. Mukhopadhaya (2003) and Persico (2004) show that if information acquisition is costly, a larger committee may make worse decisions because of the free-rider problems in information acquisition. The benefits of a potentially better decision by a larger committee are outweighed by the decreasing incentive of committee members to gather relevant information because they have perceived that their decision will have a smaller impact on the final result. Furthermore, Persico determines the optimal voting mechanism as consisting of the voting rule and the committee size. He concludes that large majorities, or in the extreme, unanimity, as a voting rule in the context of an increasing committee size, are optimal only if the information available to the committee members is sufficiently accurate. Conversely, this conclusion implies that when the accuracy of the relevant information is limited, the quality of decision making decreases with the size of the committee, and that large pluralities are or will be the dominant voting rule, as is the case in private equity.

All our observations are, of course, moderated by the existence of covenants that are usually written into the contract agreements between limited and general partners of private equity funds (Gompers and Lerner, 2004, 65–90; Cumming and Johan, 2009, 69–92). One typical set of restrictions limits the amount invested in any one firm, which has implications for the ratio of fund volume to the number of investment professionals. Gompers and Lerner and Cumming and Johan found that more experienced fund managers tend to have fewer restrictive covenants, which may in part explain why at least some funds tend to grow over the course of time without investing in more companies and without a similar growth in the number of investment professionals. However,

we are not aware of research that systematically compares covenants of buyout and venture capital funds, leaving room for additional theoretical and empirical research in the future.

Why Do (or Don't) Venture Capital Firms Go Public?

After having found at least preliminary answers to the question of why private equity firms usually remain tiny boutiques even when they are quite mature in terms of age, and initial ideas on what explains differences between buyout and venture capital firms, the next question we raised in our introduction is, Why are these firms usually organized as limited partnerships and why don't these firms—or why in some circumstances might they—go public, as so many companies in other business sectors do? As stated above, we focus our analysis on venture capital firms and not so much on buyout firms, where it remains to be seen what implications the recent public listings have on the strategy and performance of these firms.[5]

Initial Considerations and Empirical Observations

At first sight, and apart from the obstacles we discussed above, going public may look like an interesting financing option for venture capital firms. Yet in the LP model, fundraising is a complex process. Finding sufficient individuals and institutions that are willing to invest takes time and effort, and once those investors are engaged it still may not be easy to handle them due to their professional experience and attitude as well as the large number of restrictive covenants in the LP agreements (see Gompers and Lerner, 2004). A public offering allows a VC company to address private investors as a target group, which may be relatively easy, especially in boom times. At those times many individuals are attracted to public capital markets, in particular to trend investments such as venture capital or technology-intensive businesses that were often included in the portfolio of VC companies before they were divested via public listings. Moreover, the public attention that often comes with a listing may generate even more interest in the VC industry and its potential investment opportunities. Consequently this may result in facilitated attraction of investments in this sector in the future.

What does all this look like from an investor's perspective? Portfolio selection theory (Markowitz, 1952; Rubinstein, 2002) and empirical research (e.g., Chen

et al., 2002; Schneeweis et al., 2002; Connor, 2003) show that investors with average risk tolerance should allocate 3 percent of their capital to private equity as an asset class, whereas allocations above 10 percent should be entered into with great caution and only by knowledgeable investors with access to top-quartile fund managers (Idzorek, 2007). Moreover, requirements for risk diversification imply that investments should be allocated between early- and late-stage investments and between different companies within these asset subclasses. This has two direct implications. First, only a small percentage of private investors, the so-called high-net-worth individuals, are ready for investments in venture capital. Second, investors need qualified information about each single investment and the asset class as a whole in order to understand their risk/return characteristics. Since the measurement of risk and return of VC funds continues to be a challenge even for practicing VC managers and researchers (see, e.g., Chiampou and Kallet, 1989; Gompers and Lerner, 1999; Cochrane, 2005), it is reasonable to assume that this is also a challenge for the "normal" investor who buys shares at a stock exchange.

These implications lead one to suspect that raising capital through an IPO may not be the preferred means of fundraising for a VC company, and this is supported by a small number of studies that analyze the risk/return profiles of publicly listed VCs (see Table 3.1).[6] Three main findings can be extracted from those studies. First, the return of publicly traded VC stocks may or may not be higher than that of other stocks in the long run, but is lower in comparison to private limited VC partnerships. Second, the overall risk of VC stocks is higher than that of other stocks. Third, publicly traded VC stock is correlated to the overall stock market. However, a small diversification effect of publicly traded VC stock is still visible since the Beta coefficient tends to remain below 1. The diversification effect decreases in a bearish market, thus in times when a lower correlation would be necessary. In conclusion, the main reason for investing in an alternative asset class is the diversification effect, which comes from the degree of noncorrelation of the asset class with the overall stock market. This characteristic of the asset class is not available in its entirety in publicly traded VC stock. Hence, other investment characteristics, such as stand-alone profitability, have to be given in listed VC firms in order to convince investors.

Besides private investors, institutional investors also may buy stocks of VC companies in order to diversify their investment risk (Gogineni and Megginson, 2010). However, there is no a priori reason why institutional investors should prefer investments in listed VC firms over LP funds. Interestingly, in publications that intend to advise potential investors, we do not usually find any information about such a choice; investments in LPs are seen as the standard way of engaging in this industry (see, e.g., EVCA, 2002).

These considerations suggest that the public listing of a venture capital firm may not be an attractive option, at least from the perspective of the institutions and individuals who may invest in those firms. However, what intrigues us is the fact that there *are* some venture capital firms that went public in the past decade—not so much in the United States, where legal restrictions make

Table 3.1 Research on Publicly Listed Venture Capital: An Overview

Author/s	Sample Description	Data Sources	Methods of Analysis	Most Important Findings
Martin and Petty 1983	11 U.S.-based, publicly traded VC funds (eight small business investment companies [SBICs] and three VC firms), in comparison with 20 maximum capital-gains mutual funds and the S&P 500 stock index, 1974–1979	Return data for VC firms from various issues of *Venture Capital*; mutual fund data from Wiesenberger investment company services	Mean-standard deviation comparisons; general stochastic dominance method	VC stocks contain more risk than other stocks or funds. However, return compensates higher risk. Even risk-averse investors tend to prefer the return distributions of one or more VC firms over some of the mutual funds or the stock index
Brophy and Guthner 1988	12 U.S.-based, publicly traded VC funds (May 1981–February 1985), in comparison with 12 randomly selected open-end mutual funds and the S&P 500 stock index	Compustat Executive Data Service, S&P Daily Price Index	Variance and ordinary least square (OLS) analysis; Scholes/Williams beta estimation technique	Average return of the portfolio of VC funds significantly exceeded the performance of the portfolio of mutual funds and the S&P 500. Part—but not all—of these differences can be explained by underpricing phenomena. VC funds have a very low (s/w) beta coefficient (0.73), as compared to 1.07 for mutual funds

(*continued*)

Table 3.1 (continued)

Author/s	Sample Description	Data Sources	Methods of Analysis	Most Important Findings
Kleiman and Shulman 1992	26 U.S.-based, publicly traded VCs (14 SBICs and 12 business development companies [BDCs]), 1980–1990 (not all firms coexisted for the entire period); NASDAQ monthly returns as benchmark for comparison	Moody's Bank and Finance Manuals; *Venture Capital Journal*	Mean-standard deviation comparisons; Scholes/Williams beta estimation technique	In the 1980–1986 period SBICs significantly outperform and BDCs slightly underperform the market on a risk-adjusted basis. Systematic risk much lower and unsystematic risk higher for SBICs than for BDCs In the 1986–1990 period public VCs performed below the prior period, in line with the VC industry in general. BDCs outperformed SBICs and the market; SBICs underperformed the market
Manigart et al. 1994	33 listed European VCs, 1997–1991 (18 companies located in France, 11 in the U.K. and Ireland [but listed in London], 2 in the Netherlands, 1 in Belgium, and 1 in Spain)	Membership lists of EVCA and national VC associations; Venture Economics' Second Guide to European Venture Capital Sources (1988) and other sources for the various European countries; stock market data from Datastream	OLS regression; nonparametric Wilcoxon Rank-Sum tests; Hodges-Lehmann estimator	Only 8 VCs have a return that beats the market. U.K. companies perform on average better than continental European companies. Stage specialists tend to perform higher, geographically specialized VCs lower than companies with a broader investment scope. No statistically significant difference between sectorially and nonsectorially specialized

				companies. Overall risk of VC companies is significantly higher, but systematic risk is significantly lower than market risk and lower than in the U.S. (especially in continental Europe). Specialized companies tend to have a lower, not a higher systematic risk than companies with a broader investment focus
Bauer et al. 2001	124 privately traded private equity (PTPE) vehicles, listed in different countries, across different investment foci and types, May 1996–February 2001; comparison with different market indices	Primark Datastream; BIZ; *Mergers & Acquisitions Review*	Mean-standard deviation comparisons; correlation analyses	PE portfolio outperforms all other asset classes, and PE as a portfolio is not riskier than traditional investments (Sharpe ratio of 1.25, in comparison to 0.60 for S&P 500). Sharpe ratio for firms with an early-stage investment focus much higher than for management buyout vehicles. Correlation of PTPEs and other investment categories between 0.3 and 0.5. Average returns very different between first and second half of the year

(*continued*)

Table 3.1 (continued)

Author/s	Sample Description	Data Sources	Methods of Analysis	Most Important Findings
Cumming 2003	71 U.K. venture capital trusts (VCTs), 1998–2002, as compared to the returns of the U.K. venture capital industry as a whole (and other comparable indices)	www.trustnet.com; PriceWaterhouse Coopers; European Venture Capital Association	Average performance comparisons (1, 3, and 5 years)	VCTs significantly underperformed over 3- and 5-year periods. Short-term performance after the new economy crash in the same range as private VC companies. Results hold true when sample is restricted to the more experienced VCTs
Zimmermann et al. 2005	114 private equity companies, listed in different countries, 1986–2003	Primark Datastream	Calculation of Jensen's alpha, betas, and Sharpe ratios	For 1986–2000 the Sharpe ratios of two equally weighted portfolios (fully or partially balanced), but not of a value-weighted buy-and-hold portfolio, clearly exceed the ratio of MSCI World stock market. For the full period (1986–2003) only the equally weighted, fully rebalanced portfolio shows superior performance. However, this advantage disappears when autocorrelations and the bid-ask bias is taken into account. The survivorship bias plays a minor role but is surprisingly *positive*. Dimson Betas of around 1 when autocorrelation bias is adjusted

Lahr and Herschke 2009	274 publicly traded entities (109 funds, 116 investment companies, 30 management companies ["firms"] and 19 fund of funds), listed in different countries, January 1986–March 2008	VentureXpert; Datastream; press releases	Calculation of Jensen's alpha and Sharpe ratios; International CAPM	Firms and investment companies achieve highest returns at a correspondingly high standard deviation. Sharpe ratios higher than at MSCI World; however, autocorrelated returns suggest market inefficiencies in this asset class, and CAPM estimates do not reveal significant excess returns. Different organizational forms show very different systematic risk characteristics (Dimson beta range from 0.8 for fund of funds to 2.0 for investment companies)

public offerings of venture capital firms extremely unattractive, but in countries such as the United Kingdom, Germany, and Japan, where the legal framework provides more options with regard to structural decisions of venture capital firms. Table 3.2 provides an overview of German firms that went public in the late 1990s and early 2000s—without much success, as we can see looking backward and as the table also indicates. To understand why, we conducted a total of seven case studies on some of these companies and for comparison also on privately owned venture capital companies. We used data from OneSource and Investext and consulted forty broker reports and industry studies. Furthermore roughly 4,800 newspaper articles and press releases and all company reports from the case study companies were screened for information about relevant events and decisions regarding the topics of our research. Finally, we conducted sixteen interviews with founders and leading members of management boards of those venture capital firms. Based on the data, we extracted five observations that explain why going public seems to be an unfavorable strategy for venture capital firms. These observations complement the concerns about the specific inefficiencies and inflexibilities that characterize the statutory governance

Table 3.2 German Venture Capital Firms That Went Public In the Late 1990s and Early 2000s

Company Name	Listing	Comment
AdCapital AG	10/2000 (Berliner Elektro Holding AG)	Change to management buyout/management buyin/, mezzanine financing and investments in financial assets
Advantec Beteiligungskapital AG & Co. KGaA	6/2000	Still active as VC and as a seller of company shells
Bmp AG	7/1999	Still active; focus on early-stage investments in Germany and Poland and on PE advisory and management
Capital Stage AG	7/1999 (HWAG)	Still active, but on a very low level
Gold-Zack AG	1990	Moved into the VC business in 1996; change to financial services for midcap companies and real estate business; filing for insolvency 6/2003
Knorr Capital AG	4/1999	Filing for insolvency 11/2002
TFG Venture Capital AG & Co. KG aA	2/1999	Change to buyouts; VC business transferred to a private company
UBAG Unternehmer Beteiligungen AG	6/1999	Change to PE and consulting; liquidation in 12/2006
U.C.A. AG	12/1998	Change to late-stage "Mittelstand" investments and consulting

mechanisms of the public model in a number of countries (Cumming, 2003; Cumming and MacIntosh, 2007).

Stock Market Obstacles

All our interview partners agreed that establishing the new business model of a publicly listed VC company was the only possibility in times of an extraordinary boom and that listed VC firms are bound to a procyclical investment strategy. Any change to an anticyclical comportment would require that the liquidity of an IPO or capital increase be "parked" over a long period of time at very low interest rates, without any economic activity taking place. However, such a procedure is not possible for a listed company. The procyclical investment behavior, on the other hand, starts a vicious cycle that is impossible to stop. The high entry price of start-up establishments turns out to be highly inflated when confronted with a change in the economic situation and a downturn of the price by the time the start-up exits. For this reason, it is difficult to yield a profit from investments that were undertaken in times of the new economy boom. Within the structure of market-quoted VC firms, it is therefore nearly impossible to implement the principle of "Buy low—sell high," because the stock market's climate affects the optimal point of time for fundraising and hence determines the starting point of the fund's investment activity.

Closely tied to the stock market cycles is the difficulty of financing a "dry spell," a condition in which no exit opportunities for portfolio companies exist, arising from a stock market depression and an unfavorable overall economic situation. A limited partnership VC fund can, in such a case, support the fund by drawing on the management fee and possibly by participating in second-round financing of portfolio companies. This is possible since a part of the fund volume is generally kept in reserve for such purposes. However, many listed funds did not reserve money for additional rounds, meaning that a "continuous nursing" of the portfolio company was not possible. Besides, such action is sustainable only within limits, because in quoted VC firms there is no differentiation between the solicitation and the call for capital; rather the processes occur at the same time.

Cost Considerations

Furthermore, a listed VC firm faces high costs, which represent a severe burden to the financial reserves in times of no exit. Typical costs of listed VCs are due to the fulfillment of regulatory requirements, such as disclosure, general assembly, and listing fees. Among them are expenditures for the laborious and time-consuming reporting needs and public relations measures. Additional costs are caused by the IPO and potentially by a "designated sponsor," mandatory for firms to be listed on the New Market.[7]

The case studies have shown that the sum of all expenses for the fund administration plus the costs for the financing of the portfolio companies can quickly lead to the total exhaustion of the fund's resources, thereby causing either insolvency or a change in the business model. The high burn rate of a listed fund along with the

lack of constant income causes this business model to be extremely vulnerable in times of crisis, making it a pure "fair weather model."

Being quoted on the stock market indirectly leads to the necessity of exhibiting growth and to the establishment of distinct structures within the enterprise. In comparison with the small and flexible VC boutiques in LP structure, the listed VC firms in our sample had become relatively large and personnel-intensive. Consequently their fixed costs rose, but the business volume did not increase. Cost management was not a prioritized activity within listed VC companies, which is partly due to a lack of separation between fund and administration (except at TFG Venture Capital). Moreover, there was no disciplining effect of an annual management fee. The latter is limited to about 2 percent of the committed capital or net asset value and inevitably results in strong cost controls. Thus the fact that the funds spent higher amounts on administrative tasks could not be ruled out. A separation of investment capital and administrative expenditures did not exist.

These potential cost disadvantages did not catch the attention of the case study companies so long as sufficient financial means were available. With the available means becoming more scarce due to the strong investment activity, it became apparent that the remaining capital could not feed the fund over a longer dry spell without returns from the portfolio. In several cases any further investment activity became completely impossible. No wonder, then, that several of the VC managers we interviewed again made statements about going public as being solely a "fair weather model" that booms and flourishes in a bull market and when exits are easily achievable. However, if the market sentiment and the economic development take a negative turn, the above-mentioned model reaches its limits rather quickly. This is due to the need to sustain a long-term financial buffer for the financing of start-ups in a bear market. The result is either bankruptcy of the listed VC firm or an abandonment of the business model.

Cash Management

An identical appraisal of the situation by private and publicly listed venture capital firms can be found in the effects of going public on cash management and, interrelated, the problem of asset allocation. The separation between capital solicitation and call for capital within the LP model ensures that an allocation of close to 100 percent in VC must be reached at all times for the capital to be placed in the desired investment class. With listed VC firms, on the other hand, capital solicitation and demand coincide at the time of the IPO or capital increase. For this reason, large quantities of liquid assets that do not belong to the VC investment category are held by the venture capitalist, and thus these assets earn interest at fixed rates only. Misallocation of capital, inherent in the system of market-listed VC firms, is recognized as a considerable flaw without remedy.

At the same time it is essential for listed VC firms to maintain enough liquidity reserves for future investments as well as for the administration of the fund. If these reserves are not invested during times of easy exit or capital increase, respectively,

the company is in serious danger. The same applies if a period of stagnation, with both exit and increase impossible, lasts too long. Both VC groups recognize the vulnerability to fluctuations, an integral part of the VC business, as a negative factor of considerable importance. However, the understanding of this issue was nonexistent in listed VC firms at the moment of going public. The problem of maintaining cash was not recognized and its importance was thus underestimated. Therefore going public was performed with a positive attitude concerning its feasibility. Yet, reality turned out to be considerably more difficult and complex. In combination with the high cost of a listed VC firm the problems tied to cash management were so serious that they became causative for the abandonment of the business model.

PR and Reporting Risks

The big attraction of going public during a favorable economic situation (the large showcase effect) is reversed in times of crisis and becomes a burden. The lacking or even negative PR effect causes the share price to dip rapidly. Additional investors become disappointed in the title and join the sellers, so that the price of shares gets hit even harder. This is nothing new in terms of stock market developments; however, two significant differences exist.

First, no "fair value" can be easily assessed for a venture capital investment. For this reason, the share price will fall further than actually justified by the imaginary value of the portfolio. Due to the uncertainties concerning the possibility of recovery, the relationship between net asset value and stock price ceases to exist under these circumstances. Second, there is no ability to overcome the crisis. In order to keep the company alive, the venture capitalist needs enough capital to continue the financing of the portfolio firms and to undertake new investments as well as pay the company's administration. However, fresh influx of capital is difficult to maintain by means of solicitation if there is an unconvincing amount of equity and the share price is low. Thus, the financing problems spell doom for many listed VC firms. Furthermore new and promising investments need to be incorporated into the portfolio to assure the future viability of the fund. In view of the damaged public reputation, first-class start-ups are bound to avoid VC firms shaken by crisis. As a consequence investment possibilities will be of lower quality, which again reduces the value of the company; this leads to a vicious cycle that is nearly impossible to break.

Asset Allocation Problems

The investor is faced with the problem of asset allocation as the money invested in the listed VC firm is invested only partly in VC; the remaining amount is parked in fixed-term deposits until the time when investments may take place. For this reason, the investor is not assigned the class of investment that he expects or that he believes the portfolio covers. Such problems do not exist in LP VC funds, as they call for the money only after concrete investment projects have been established. Consequently, there is also no need to invest money short term and at a low interest

rate, and during this time the investor can make her own decision about the use of her capital.

Moreover, listed VCs do not fulfill the requirements that are common for an alternative investment class. The correlation with the general stock markets is the decisive criterion for the delimitation of an alternative investment class. The function of such an alternative investment class is to maintain the value of the total portfolio in a stock market slump in an investment form that is as uncorrelated as possible. In this manner the efficiency of the portfolio is increased and the risk content is reduced through expectations of yields on unchanged levels. On the other hand, the portfolios of listed VCs correlate strongly with the general stock market, particularly in times of a market slump; hence the criteria that apply to an alternative investment class are not fulfilled. The added value that can be realized through diversification of a portfolio cannot be captured, and the listed VC firm simply becomes another normal stock investment without a particular portfolio effect or effectiveness.

One reason mentioned by all LP VC firms as being instrumental in deciding on private funding, a reason not recognized as a criterion by listed venture capitalists, is conforming to a market norm. Private VC firms attach great importance to operating within a structure that is also chosen by a majority of venture capitalists and is well known to institutional investors. Such structure brings about a very particular and discrete modus operandi. The number of investors or decision makers who invest in VC partnerships is very small. Therefore the business is based on personal relations, and the investors decide to invest in a LP VC fund based on the strength of the given partners and their track records. Accordingly there is no need to advertise to the public at large or to be conspicuously represented in the media. Aside from start-ups, only the limited circle of investors is considered as a target group for corporate communication.

Contrary to this approach, it is important for listed VC firms to address the general public and to beat the communications drum rather aggressively. This becomes particularly apparent in the case studies of listed VC firms. The management boards were frequently represented in the media, and thus the public became aware of these corporations. For listed VC firms, being discrete and close-mouthed is not desired. For LP VC funds it is eminently important not to be exposed to the public or put in the limelight as the development of portfolio corporations does not always follow a linear fashion but may suffer setbacks. In other words, there may be periods of valuation drops. Such developments are very difficult to explain, and it is nearly impossible to make them plausible to the general public. The expectations are aligned with constant and permanent success, whereas portfolios of venture capitalists will invariably face temporary setbacks. An institutional investor is aware of these circumstances. In a close relationship it is easier to explain and to make him understand such portfolio developments. The expert knowledge about investment classes and the understanding of the business is considerably more pronounced with institutional investors than with the general public.

Theoretical Backing

How do our observations correspond to the literature? We focus on three points in answering this question.

First, we have observed that many venture capital firms simply prefer to follow the standard of a LP model and not to switch to the alternative business model of a publicly listed VC firm. This leads us to conclude that the VC industry is a very conservative industry in which new entrants do what other firms have done for a long time, something that is in line with the concept of "normative institutions" (Bruton et al., 2005) as well as the idea of "path dependency" (Arthur, 1994) and the importance of a successful track record that facilitates subsequent fundraising activities (Kaplan and Schoar, 2005; Gompers and Lerner, 2004). Those who don't follow the standard of an LP model send a signal that they don't have such a success history and that their company, which is to be sold on a stock exchange, may be a "lemon" (Akerlof, 1970).

Moreover, the established, traditionally structured VC firms may then treat these companies as industry outsiders. Anand and Galetovic (2000) argue that in industries where property rights over the relevant information is difficult to define and enforce, established market players have to solve the problem of how to prevent others from free-riding on their costly information-gathering efforts. In the VC industry positive due diligence of a potential portfolio firm by one VC company can be taken as a signal of a promising investment opportunity by another VC company. Therefore, the established players tend to exclude free-riders by means of "closed shop" thinking, meaning that they co-invest only with those other VC companies that follow a similar fundraising model and have established relations to credible investors and also a reliable track record. Consequently, players with an alternative business model are at a severe disadvantage that in the end may result in inferior performance measures.

Second, our interviews revealed that the publicly listed VC company may be seen as a fair-weather model that doesn't work in times of cold capital markets (Bayless and Chaplinsky, 1996). This fits the recurring observation that VC investments are cyclical (Cattanach et al., 2000; Gehrig and Stenbacka, 2003) and investors' reactions tend to "overshoot" market developments (Gompers and Lerner, 2001). In boom times the capital markets may be receptive to every new business model, including publicly listed VC firms, but once the decline has started, investors lose their trust and the stock values plummet, which is exactly what happened to our case study companies (see Figure 3.3).

We have also observed that publicly listed VC firms face considerable PR and reporting risks, which result from the fact that these firms are exposed to public sentiments and badly informed investors who do not understand the complexity of the VC business and therefore tend to an "irrational" valuation of stocks. This is in line with the behavioral finance literature (Barberis and Thaler, 2005). Indeed, the risk/return profile of a venture capital fund is extremely difficult to valuate (Cochrane, 2005, among others), and to understand the specifics and prospects of the VC firms' portfolio companies is nearly impossible from the perspective of an

external investor as well as an experienced analyst (Doukas et al., 2000). Moreover, the time horizon of an investment is usually very long. Ljungqvist and Richardson (2003), for example, have shown that the internal rate of return of an average VC fund does not become positive until the eighth year after the initial investment, which is a direct implication of the fact that it takes time to make the portfolio firm investments and lead these portfolio companies to an exit (Grabenwarter and Weidig, 2005). In contrast, a stock exchange is driven by a myopic investment horizon (Froot et al., 1992; Gaspar et al., 2005), implying that the valuation of a VC stock has to be completely independent of any fundamental analysis, which is then a gateway for irrationalities. For the market of closed-end mutual funds, which has investment characteristics similar to public VC funds, Lee et al. (1990) show a number of anomalies: (1) that new funds appear on the market at a premium and move rapidly to a discount, (2) that these funds usually trade at substantial discounts relative to their net asset values, and (3) that discounts and premiums are subject to wide variation, both over time and across funds. All this seems also to be true for public VCs, as we have observed.

Third, we argued earlier that we need more insights into the venture capitalist–investment relationship (Barry 1994). Principal/agent theory argues that there are at least three mechanisms by which an alignment of interests between principal and agent can be reached: via contract design (e.g., Hart, 2001), monitoring (e.g., Fama and Jensen, 1986) and incentive systems (e.g., Jensen and Meckling, 1976).

We mentioned above that in the LP model, the extensive use of contractual covenants is well established to ensure that the general partners work in the interest of fund investors (Gompers and Lerner, 2004; Cumming and Johan, 2009) and investors fulfill their duties (Rand and Weingarten, 2002). In a German public company it would easily be possible to define managerial actions that require the agreement of the supervisory board. However, in our case studies we could not find such a set of covenants. Therefore, it was relatively easy for the VC firms in our sample to redefine the focus of investment and to diversify in other businesses. In an LP structure the contractual covenants would have prevented managers from such a strategy change.

With respect to monitoring, it seems that in private partnerships the willingness of investors to control the general partners is rather limited (see Robbie et al., 1997). Since contractual covenants do not play an important role in our case study companies, it could be expected that active monitoring play a more prominent role in German publicly listed VC companies. However, we could not observe any significant interventions of supervisory board members into the operations of the management. This is in line with the negative image of the German corporate governance system in general, at least in the late 1990s and early 2000s (e.g., von Werder and Talaulicar, 2006).

Whether or not performance-based incentive systems really work in the interest of shareholders is a controversy topic in the agency-related literature (e.g., Daily et al., 2003). Gompers and Lerner (1999) find no correlation between a variable

compensation and fund performance for a sample of 419 U.S.-based VC partnerships. Snow (2003) argues that general managers may lose their motivation to work hard when they definitely don't expect to reach the required hurdle rate, and that this may serve as a rationale for specialized funds to take over those other "underwater funds." Therefore, the positive impact of a performance-related incentive system should not be overestimated in the case of a publicly listed VC company. If there is an impact, however, the difference in time horizons between investments in portfolio firms and management compensation is certainly a problem. We do not have many data on the incentive systems of our case study companies. What we do know, however, is that the lock-up period for management to sell shares tends to be no more than two years. If we assume that ownership is positively related to work motivation and performance (which is highly disputed as well; see Dalton et al., 2003), then the sale of shares could also be a problem that does not occur in private partnerships.

Conclusions

In this chapter we first identified determinants of firm size in private equity. We based these determinants on the observation that private equity firms have relatively small organizations, particularly as compared to firms of other professional services sectors. We identified size patterns based on a quantitative study of European private equity firms, which we then explained by a qualitative study on selected private equity firms. We outlined at least two fundamental determinants of firm size: the characteristics of the services provided and the organizational structure and/or the characteristics of the decision process. Supplementary to other concepts on firm size, this analysis includes not only elements that promote an increase in size, but also factors that inhibit an increase in size.

We have also shown that the standard model for structuring a VC company, the LP structure, is based on sound reasoning anchored in the VC business model and industry dynamics. Our observations make clear that a publicly based VC company suffers from many problems and lead to the conclusion that VC companies should indeed structure themselves as private partnerships, as most of them already do, and that they should not switch to another business model even if booming capital markets may offer opportunities to do so.

Why some of the more prominent buyout firms recently made decisions to go public, and how successful these public listings eventually are, is yet to be clarified. We believe that these listings may simply be a reaction to an overheated market, and some of these firms may regret their decision in a consolidated market environment. To answer these questions in a more systematic way is one of the research avenues we see as promising for the future.

Notes

1. This section draws heavily on Willert and zu Knyphausen-Aufsess (2008) and Willert (2006). The authors are indebted to Florian Willert for allowing us to make use of the data and theoretical interpretations he has collected and developed while he was working on his doctoral dissertation (with the first author as his advisor). Of course, all remaining errors are ours.
2. Since October 2003 the business models of our case study firms have moved forward. In particular, Apax Partners now focuses only on buyout deals and can no longer be considered a "generalist."
3. The leverage difference between Warburg Pincus (1.0) and Apax Partners (2.3; see above) is somewhat surprising, since both firms are classified as "generalists." However, a look at the respective firm histories reveals that Warburg Pincus had its origins in the VC business, whereas Apax Partners is rooted in the buyout business. Hence we can interpret the leverage difference as a legacy of different firm histories.
4. As of 2004.
5. This section draws in part on Koehnemann (2004). Von Nordenflycht (2007) discusses the public ownership issue in the context of professional service firms and makes clear that this issue is underresearched and not well understood, especially from the perspective of organization theory. With his specific focus on advertising agencies, he then finds, *inter alia*, that public ownership is associated with inferior performance only for small but not for large agencies. Since PE firms are tiny boutiques, as we observed above, we can indeed expect that these firms underperform private partnerships. Our discussion below provides evidence for this expectation and arguments that are specific for the industry context that is of interest in this chapter.
6. Note that Bauer et al. (2001), Zimmermann et al. (2005), and Lahr and Herschke (2009) are not strictly confined to VC funds but also include buyout vehicles. For other studies with a broader focus on listed PE firms, see Müller and Vasconcelos (2010); Lahr and Kaserer (2010); Kaserer et al. (2010).
7. The New Market is a market segment of the German stock market that was used for high-tech and new business listings between 1998 and 2003.

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PART II

LEVERAGED BUYOUTS

Structure, Governance, and Performance

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CHAPTER 4

LEVERAGED BUYOUTS AND PUBLIC-TO-PRIVATE TRANSACTIONS

LUC RENNEBOOG

The public corporation is often believed to have important advantages over its private counterpart. A stock market listing allows firms to raise funds in public capital markets, increases the share liquidity for investors, allows founders and entrepreneurs to diversify their wealth, and facilitates the use of options in remuneration packages. Also, the higher degree of visibility and media exposure of public firms can be an effective tool in the marketing of the company. On the more personal level, founders and managers of public corporations generally enjoy more prestige. However, the publicly quoted company with dispersed ownership may suffer from too high a degree of managerial discretion resulting from a lack of monitoring, which may lead to "empire building" to the detriment of shareholder value. One way of refocusing the firm on shareholder value creation is the leveraged buyout (LBO), in which an acquirer takes control of the firm in a transaction financed largely by funds borrowed against the target's assets and/or cash flows.

This chapter analyzes the motives behind taking public firms private and provides a structured overview of the empirical research performed in this area. I examine which types of firms go private and the determinants of takeover premiums in LBO transactions. I also investigate whether the posttransaction value creation as well as the duration of private status can be explained by the above mentioned potential value drivers. The chapter answers the questions whether or

not public-to-private (PTP) transactions lead to superior organization forms compared to public firms, and whether going private is a form of shock therapy used to restructure firms that generates both strong short- and long-term returns.

Definition and Taxonomy of Leveraged Buyout Transactions

When a listed company is acquired by a nonstrategic buyer and subsequently delisted, the transaction is referred to as a public-to-private or a going-private transaction. As virtually all such transactions are financed by borrowing substantially beyond the industry average, they are called leveraged buyouts; an overview of the different types of LBOs is given in Table 4.1. In fact LBOs comprise not only PTP transactions but also nonlisted firms that undergo a similarly leveraged acquisition. However, in line with the scope of this chapter, I use the terms LBO and PTP

Table 4.1 Summary of Definitions of Public-to-Private Terms

Term	Definition
LBO	Leveraged buyout. An acquisition in which a nonstrategic bidder acquires a listed or nonlisted company, utilizing funds containing a proportion of debt substantially beyond the industry average. In case the acquired company is listed, it is subsequently delisted and remains private for a short to medium-long period of time
MBO	Management buyout. An LBO in which the target company's existing management bids for the control of the firm, often supported by a third-party private equity investor
MBI	Management buyin. An LBO in which an outside management team acquires (often backed by a third-party private equity investor) a company and replaces the incumbent management team
BIMBO	Buyin management buyout. An LBO in which the bidding team comprises members of the incumbent management team and externally hired managers, often alongside a third-party private equity investor
IBO	Institutional buyin. An LBO in which an institutional investor or private equity house acquires a company. Incumbent management can be retained and may be rewarded with equity participations
Reverse LBO	A transaction in which a firm that was previously taken private reobtains public status through a secondary initial public offering (SIPO)

transaction interchangeably because in the empirical U.S. and U.K. literature LBOs are usually confined to going-private transactions.

To date, management-led transactions constitute the majority of PTP activity. When the incumbent management team takes over the firm (frequently backed by private equity investors), the LBO is called a management buyout (MBO). When an outside management team acquires the firm and takes it private, we refer to this transaction as a management buyin (MBI). The fact that an outside management team does not have the same level of private information as the incumbent managers in MBOs makes MBIs a completely different type of deal. An outside management team will generally target firms wherein the incumbent management cannot or does not want to realize the full potential of corporate value, which entails that MBIs are more frequently hostile transactions (Robbie and Wright 1995).

When the new owners of a delisted firm are solely institutional investors or private equity firms, one tends to refer to these transactions as institutional or investor-led buyouts (IBOs). In some IBOs the continuing effort of the management team is central to the success of the offer, while in other cases the management team is removed. For the typical IBO in which management stays on, it is customary to reward managerial performance with equity stakes in the new private firm via so-called equity ratchets (Wright et al. 1991).[1] In terms of equity ownership, what separates MBOs from IBOs is whether the management team has gained its equity interest through being part of the bidding group (in the case of an MBO) or as a component of a remuneration package (in the case of an IBO).

After holding their investment for some time, private equity investors can opt to exit their investment through a secondary initial public offering (SIPO). Firms that were previously taken private and subsequently reobtain public status are referred to as reverse LBOs. Other means of exiting their investment are trade sales or a secondary buyouts (a detailed discussion of which is beyond the scope of this chapter but can be found in Cumming and Johan 2008).

What Motivates Public-to-Private Transaction?

Shareholder-Related Agency Costs Hypotheses

In this particular case, the central dilemma of the principal-agent model is how to get the manager (the agent) of a company to act in the best interest of the shareholder of the company (the principal) when the agent has diverging interests from the principal's and an informational advantage. Agency theory conjectures that the

manager of a privately owned company or a listed firm with a major blockholder will be more prone to act in the best interest of the shareholder than the manager of a listed company with a dissipated ownership structure (Cumming et al. 2007). Three hypotheses underlie this claim: the incentive realignment hypothesis, the control hypothesis, and the free cash flow hypothesis.

Incentive Realignment Hypothesis

When the manager sells off a portion of the residual claims (shares) to outsiders, the marginal costs of nonpecuniary benefits decrease as he will bear only a fraction of those costs. As a result, the manager increases his private benefits (a behavioral pattern called "shirking"), which decreases the firm's value for the principal. Private equity firms rely on various mechanisms to reward key managers for good performance when they undertake PTP transactions. These private equity firms (the principal) try to realign the interests of the managers (the agents) with theirs. Equity ownership is one straightforward way of doing so.[2] Based on a small sample of U.S. PTPs from 1996 to 2004 with a median value above $300 million, Kaplan and Stromberg (2009) show that the median CEO receives 5.4 percent of equity (stock and options), and the total management team 16 percent. Similar statistics are reported for the United Kingdom: the median CEO receives 3 percent of the equity and the management team 15 percent (Acharya et al. 2009).

The incentive realignment hypothesis states that the shareholder wealth gains from going private are largely the result of a system of incentives providing more rewards for managers acting in line with the investors' interests.

Free Cash Flow Hypothesis

Free cash flow is the cash flow in excess of that required to fund all projects that have positive net present value (NPV) when discounted at a relevant cost of capital. Jensen (1986) argues that managers have incentives to retain resources and grow the firm beyond its optimal size—the so-called empire building—which is in direct conflict with the interests of the shareholders. By exchanging debt for equity through higher leverage in an LBO, managers credibly "bond their promise" to pay out future cash flows rather than retaining them to invest them in negative NPV projects. At the same time the risk of default attached to the capital restructuring via LBOs increases the downside risk (e.g., losing their jobs) for managers who do not act in the best interest of the principal.[3]

Thus the free cash flow hypothesis suggests that the shareholder wealth gains from going private are largely the result of debt-induced mechanisms forcing managers to pay out free cash flows.

Control Hypothesis

Grossman and Hart (1988) explain why individual shareholders in corporations with a dispersed shareholder base may underinvest in monitoring activities (the

so-called free-rider problem). After an LBO, the equity ownership of a company is highly concentrated, giving the investors a stronger incentive and more information to invest in monitoring management. Furthermore, judging from the viability and success of buyout specialists, DeAngelo et al. (1984) argue that these third-party investors may have a comparative advantage in the monitoring task. Altogether this means that LBOs may create value by resolving the free-rider problem on the monitoring of management (the agent). Subsequent to the transaction, the control function of the investors may be not only more intensive, but also of higher quality.

The control hypothesis suggests that the shareholder wealth gains from going private are largely the result of an improved monitoring system imposed on the management team.

An LBO can best be described as a carrot-and-stick transaction: the carrot represents the increased managerial share ownership, allowing managers to reap more of the benefits from their efforts (incentive realignment hypothesis); the stick appears when the default risk of high leverage forces the managers to efficiently run the company to avoid default and pay out free cash flows in servicing the debt (free cash flow hypothesis). The control hypothesis states that private equity firms can step in for corrective action at any point in time, also when bankruptcy is not imminent.

Hypotheses Related to Wealth Transfers from Bondholders and Other Stakeholders

Wealth Transfers from Bondholders

There are three main mechanisms through which a firm can transfer wealth from bondholders to stockholders: (1) an unexpected increase in the risk of investment projects, (2) (large increases in) dividend payments, or (3) an unexpected issue of debt of higher or equal seniority or shorter maturity. All these elements can effectuate wealth expropriation of specific stakeholders. In a going-private transaction, the third mechanism in particular can lead to substantial bondholder wealth expropriation.

The bondholder wealth transfer hypothesis suggests that shareholder wealth gains from going private are the result of the expropriation of pretransaction bondholders.

Empirical research provides some evidence of wealth expropriation, mainly for those bondholders who are not protected by covenants (see Table 4.2). Marais et al. (1989) and Weinstein (1983) do not find negative abnormal bond returns but document that going-private transactions are followed by "pervasive" debt downgradings by Moody's. Travlos and Cornett (1993) find a statistically significant bondholder loss of 1.08 percent, while Warga and Welch (1993) confirm

Table 4.2 The Bondholder Wealth Effects in Public-to-Private Transactions

Study	Sample Period/ Country	Observations	Deal Type	Event Window	Loss/Gain to Bondholders (%)	Benchmark
Marais et al. (1989)	1974–85 U.S.	33	All	[–69,0] days	0.00	Dow Jones bond index
Asquith and Wizman (1990)	1980–88 U.S.	199	All	[0,1] month	–1.1**	Shearson-Lehman-Hutton bond index
Cook et al. (1992)	1981–89 U.S.	62	MBO	[0,1] month	–2.56**	Shearson-Lehman-Hutton bond index
Travlos and Cornett (1993)	1975–83 U.S.	10	All	[–1,0] days	–1.08*	CRSP equally weighted index
Warga and Welch (1993)	1985–1989 U.S.	36	All	[–2,2] months	–5.00**	Rating and maturity weighted Lehman bond index
Billett et al. (2008)	1991–2006 U.S.	39 (without covenant) 10 (with covenant)	All	[–60, 0] daily	–6.76*** –2.30	Lehman Brothers index and nine Standard & Poor's bond rating categories

Notes: The Bondholder Wealth Effects in Public-to-Private Transactions. This table shows the estimated bondholder losses of the total public debt. Losses are calculated using an event study methodology. The benchmark returns used in the market models is specified. N is the number of different bonds that were used in the analysis (some were issued by the same company). ***,**, * stand for significance at the 1, 5, and 10 percent level, respectively.

significant bondholder wealth losses for successful LBOs. Asquith and Wizman (1990) report significant losses of 1.1 percent for unprotected corporate bonds around the buyout. Bonds protected by covenants against leverage increases or against reductions in net worth through mergers experience abnormal gains. Correspondingly Cook et al. (1992) find that bondholder losses are sensitive to the presence of restrictive covenants, and Billett et al. (2008) demonstrate that wealth expropriation of bondholders not protected by covenants is quite large, at almost –7 percent.[4]

Wealth Transfers from Other Stakeholders

The empirical literature has paid much less attention to wealth transfers other than those related to bondholders. Shleifer and Summers (1988) posit that new investors in hostile takeovers can break the implicit contracts between the firm and stakeholders (in particular the employees, by reducing employment and wages). Nevertheless Weston et al. (1998) note that such hostility against employees is not observed in PTP transactions, although there is some evidence of falls in employment after adjustment for industry effects in both the United States and the United Kingdom (Kaplan 1989a; Smith 1990; Harris et al. 2005). Brown et al. (2009) find that wealth can be transferred from suppliers to the postbuyout firms as a consequence of the increased bargaining power of the buyout firm.

The wealth transfer hypothesis suggests that the shareholder wealth gains from going private result from the expropriation of pretransaction stakeholders like employees.

Tax Benefit Hypothesis

As the vast majority of PTP transactions take place with a substantial increase in leverage, the increase in interest deductions may constitute an important source of wealth gains, depending on the fiscal regime and marginal tax rates. Tax deductibility of the interest on the new loans creates a major tax shield, increasing the pretransaction (or pre-recapitalization) value. For the period 1980–86 Kaplan (1989b) estimates the tax benefits of U.S. PTP transactions to be between 21 and 72 percent of the premium paid to shareholders to take the company private.

In short, the tax benefit hypothesis states that the shareholder wealth gains from going private result from tax benefits associated with the financial structure underlying the transaction.

Still, in spite of the apparent advantages of high leverage in LBOs, it is questionable whether it constitutes a true motive to go private; in a competitive market for corporate control, prebuyout investors will appropriate the predictable and obtainable tax benefits (Kaplan 1989b), leaving no tax-related incentives for the postbuyout investors to take a company private.

Transaction Costs Hypothesis

DeAngelo et al. (1984) remark that the costs of maintaining a stock exchange listing are very high. From the proxy statements of, for example, Barbara Lynn Stores, Inc., they infer that the costs of public ownership, registration, listing, and other stockholder servicing costs are about $100,000 per annum. Perpetuity-capitalized at a 10 percent discount rate, this implies a $1 million value increase from going private. Other U.S. estimates of servicing costs mentioned in their paper range from $30,000 to $200,000 a year, excluding management time. For the United Kingdom, Benoit (1999) reports that for U.K. quoted firms, the fees paid to stockbrokers, registrars, lawyers, merchant bankers, and financial PR companies, as well as the stock exchange fee and the auditing, printing, and distribution of accounts, amounts to £400,000 and £1,000,000, respectively.

In short, the transaction costs hypothesis suggests that the shareholder wealth gains from going private result from the elimination of the direct and indirect costs associated with a listing on the stock exchange.

Takeover Defense Hypothesis

Lowenstein (1985, 743) reports that some corporations have gone private via an MBO "as a final defensive measure against a hostile shareholder or tender offer." Singh (1990) confirms that U.S. MBOs were significantly more often under takeover pressure prior to the MBO than a sample of matched firms. Afraid of losing their jobs when the hostile suitor takes control, the management may decide to take the company private. Therefore the takeover defense hypothesis suggests that the premiums in PTPs reflect the fact that the management team may intend to buy out the other shareholders in order to insulate itself from an unsolicited takeover.

In short, the takeover defense hypothesis suggests that the shareholder wealth gains from going private result from the management's willingness to pay a high premium to buy out the other shareholders in order to retain control.

Undervaluation Hypothesis

As a firm is a portfolio of projects, there may be asymmetric information between the management and outsiders about the maximum value that can be realized with the assets in place. It is possible that the management, which has superior inside information, realizes that the share price is undervalued in relation to the true potential of the firm. This problem may be exacerbated when listed corporations, especially smaller ones, find it troublesome to use the equity market to fund expansion, as it may be difficult to attract the interest of institutional shareholders,

analysts, and fund managers. The lack of interest in such shares creates illiquidity and implies that they are likely to remain valued low, which provides an impetus to go private (Mehran and Peristiani 2009).

Lowenstein (1985) argues that when the management is the acquiring party, it may employ specific accounting and finance techniques to depress the pre-announcement share price (Schadler and Karns 1990). By manipulating dividends, refusing to meet with security analysts, or even deliberately depressing earnings, managers can use the information asymmetry to their advantage prior to an MBO. Harlow and Howe (1993) and Kaestner and Liu (1996) find that significant abnormal buying of company shares by insiders precedes MBOs, but not outsider-induced buyouts. This confirms that prebuyout insider trading is associated with private managerial information. Alternatively, it is possible that specialized outsiders (like institutions or private equity investors) realize that a firm has substantial unrealized (locked-up) value.

The undervaluation hypothesis suggests that the shareholder wealth gains from going private result from the fact that the assets are undervalued (in the eyes of the acquiring party).

Four Strands in the Empirical Public-to-Private Literature

The collective literature on PTP transactions and leveraged buyouts can generally be classified into four strands. Each strand corresponds to a phase in the buyout process and requires different econometric methodologies to investigate the sources of wealth creation from LBOs (see Figure 4.1). The literature related to the phase of *intent* describes the characteristics of firms prior to their decision to go private and compares these characteristics to those of firms that remain publicly quoted. A (tender) offer for the shares outstanding terminates the phase of intent. The second strand measures the *impact* of such an offer and is estimated by analyzing the immediate stock price reaction (cumulative abnormal return) or the premium paid to pretransaction shareholders. Once a company is taken private, the literature on the *process* phase investigates the postbuyout process of wealth creation by means of quantitative or case study methodologies. If, and when, the investor decides to end the company's private status through an exit (e.g., via a secondary initial public offering, or SIPO), hazard or duration analysis can be performed to examine the longevity of private ownership and its determinants (Cumming 2008). This constitutes the fourth strand of literature, here defined as the *duration* literature. I examine which of the eight hypotheses are empirically

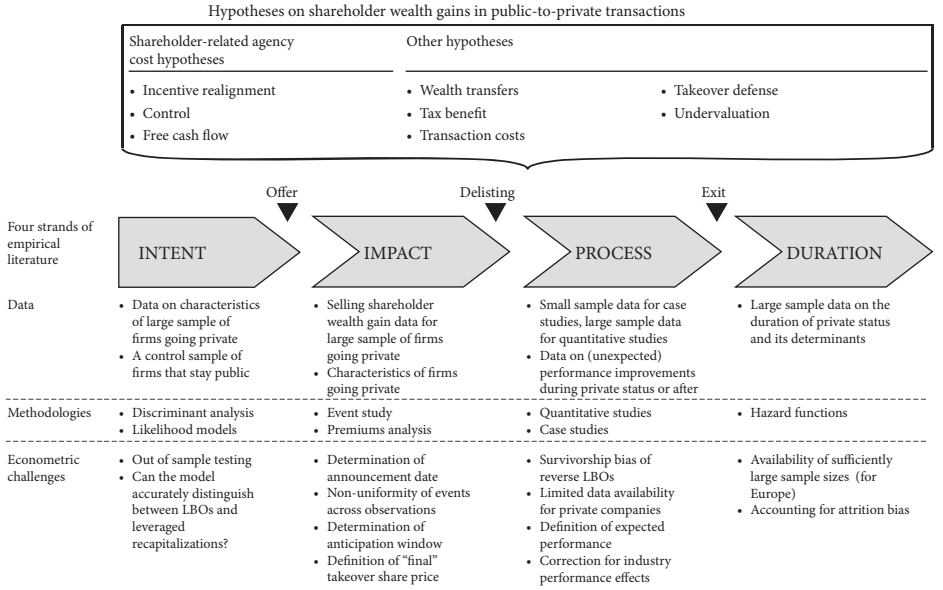

Figure 4.1 The theoretical framework of the public-to-private literature.

upheld in each of the four strands of this vast body of literature. For an overview of the main hypotheses, see Table 4.3.

First Strand: Intent

To identify the variables that distinguish best between LBOs and non-LBOs, discriminant analysis or likelihood models such as logit and probit analyses predicts group membership (LBO versus no LBO). The body of research on the pretransaction characteristics of firms going private is limited; most studies focus on the shareholder-related agency costs, the tax hypothesis, takeover defense, and undervaluation.

Empirical Results on Shareholder-Related Agency Costs, Tax Benefits, Takeover Defense, and Undervaluation

Kieschnick (1989) finds strong support for the undervaluation hypothesis, but not for the free cash flow or the transaction cost hypotheses. Judging that any potential buyer could retrieve tax benefits, he discards taxation as a factor driving MBOs. In contrast, Lehn and Poulsen (1989) find opposite results for a sample of U.S. going-private transactions over the same period: they support the free cash flow hypothesis. In addition, takeover speculation and the presence of competing bidders are significantly positively related to the likelihood of going private. This might be interpreted as support for the takeover defense hypothesis. Furthermore

Table 4.3 Overview of Hypotheses on Wealth Gains from Public-to-Private Transactions

Hypothesis	Description	Source of theory underlying the hypothesis
Incentive realignment	Shareholder wealth gains from going private are the result of a system of incentives providing higher rewards for managers acting in line with the investors' interests.	Smith ([1776] 1976) Berle and Means (1932) Jensen and Meckling (1976)
Free cash flow	Shareholder wealth gains from going private are the result of debt-induced mechanisms forcing managers to pay out free cash flows.	Jensen and Meckling (1976)
Control	Shareholder wealth gains from going private result from an improved monitoring system imposed on the management team.	Grossman and Hart (1988) Easterbrook and Fischel (1983) DeAngelo et al. (1984)
Wealth transfers	Shareholder wealth gains from going private result from the expropriation of pretransaction bondholders, employees, or other stakeholders.	Weinstein (1983) Shleifer and Summers (1988)
Tax benefit	Shareholder wealth gains from going private result from tax benefits brought about by the financial structure underlying the transaction.	Lowenstein (1985) Kaplan (1989b)
Transaction costs	Shareholder wealth gains from going private result from the elimination of the direct and indirect costs associated with a listing on the stock exchange.	DeAngelo et al. (1984)
Takeover defense	Shareholder wealth gains from going private result from the management team's willingness to pay a premium to buy out other shareholders in order to retain control.	Michel and Shaked (1986)
Undervaluation	Shareholder wealth gains from going private result from the fact that the assets are undervalued (in the eyes of the acquiring party).	Lehn et al. (1990)

as outsiders are not expected to possess the same level of superior (private) information as insiders, the authors interpret this finding as unsupportive of the undervaluation hypothesis. Several studies reexamine Lehn and Poulsen's data set while performing a more sophisticated analysis. For instance, Kieschnick (1998) documents that, accounting for the influence of the Lehn and Poulsen sampling procedure on the control sample and for outliers and misspecified variables, the data fail to support the free cash flow hypothesis. He claims that the potential for tax bill reductions and firm size are the significant variables, as is the earlier takeover interest.

Firms that went private can be classified into two different groups based on pretransaction managerial ownership. Halpern et al. (1999) conclude that there is a positive relation between the propensity to go private and the managerial shareholdings for firms with higher levels of director ownership, which is inconsistent with the incentive realignment hypothesis. Neither these authors nor Kosedag and Lane (2002) support the free cash flow hypothesis as a determinant for going private. However, the likelihood of going private is positively related to the potential for tax savings.

Finally, Weir et al. (2005a) provide one of the first systematic U.K. studies on the likelihood of going private. Their results support the incentive realignment and control hypotheses, but refute the takeover defense hypothesis. Furthermore no evidence is found supportive of the free cash flow hypothesis or accounting underperformance, although the buyout firms do exhibit lower growth opportunities. Contrary to U.S. evidence, the potential for tax savings does not seem to play a role in the choice to go private. In a follow-up study, Weir et al. (2005b) test for the undervaluation hypothesis. They document that firms going private were experiencing falling market values in the year before going private, whereas the control sample firms had rising market values. Controlling for other potential motivations, this perceived undervaluation is a statistically significant determinant of the decision to go private.

Billett et al. (2008) estimate the likelihood of being an LBO target over the period 1980–2006 in the United States. Firms lacking covenant protection are twice as likely to be targeted as non-LBOs. Their results also provide evidence that the most powerful motives are a reduction of agency problems and free cash flows. Mehran and Peristiani (2009) show that it is especially young public firms with little analyst coverage, low institutional ownership, and low stock turnover that opt to go private. In other words, these are companies with low visibility who may not be able to fully recoup the benefits of public ownership and are liable to relatively heavy listing costs.

Fidrmuc et al. (2007) further distinguish between two groups of PTPs: MBOs and private equity-backed deals. MBOs are relatively more undervalued, are smaller, have high cash levels, and are less visible, and managers own a large toehold. In contrast, firms with managers who invite private equity investors to help complete the going-private transaction are larger and have less cash at hand,

and the management owns a smaller equity share of the firm. Both types of PTPs support the hypothesis that buyouts are used as takeover defense.

Other Empirical Work

Ippolito and James (1992) observe that there is a significant increase in pension terminations following PTP transactions. This termination rate more than doubles for the sample firms around and after the going-private announcement, relative to firms that remain publicly quoted. Yet the data do not provide sufficient evidence to support the wealth transfer hypothesis as described by Shleifer and Summers (1988). Likewise the results remain inconclusive about the efficiency-improving role of going private.

Opler and Titman (1993) remark that little attention has been paid to the role of financial distress in the decision to go private. They find strong significant evidence that the costs of potential financial distress deter firms from going private in a leveraged transaction. This leads them to conclude that "debt financing is crucial for realizing the gains from going private" (1991), while discarding the idea that this is due to the tax benefits of debt usage. The authors also find strong support for the free cash flow hypothesis. Weir et al. (2004) investigate whether or not those U.S. conclusions can be transposed to the United Kingdom. Potential financial distress does not seem to deter PTPs in the United Kingdom. On the contrary, firms that go private have more collateralized assets than firms that remain public. They also examine the role of private equity and state that these investors are more interested in participating in diversified firms with higher growth prospects.

Synthesis: Intent

To conclude, there is no unambiguous support for any specific hypothesis. Table 4.4 shows that the tax hypothesis is generally well supported in the U.S. literature. However, the fact that firms with greater tax shields are more likely to go private does not necessarily mean that it is an important determinant. The reason is that, because estimating the tax benefits of an LBO is a straightforward process, the pretransaction shareholders are able to fully appropriate this tax benefit. It may therefore not be a motive for the parties initiating the LBO or MBO. Whereas the free cash flow hypothesis is only sporadically supported, the going-private decisions are frequently motivated by antitakeover defense strategies and by heavy listing costs. The undervaluation hypothesis receives mixed support.

Second Strand: Impact

If leveraged and management buyouts are associated with value creation, who is the receiver of these benefits? The wealth effects of going-private transactions

Table 4.4 Summary of Previous Empirical Results for the First Strand of Literature: Intent

Study	Sample Period/ Country	Obser-vations	Transaction type	Econometric Technique	Tax	Incentive Realignment	Control	Free Cash Flow	Wealth Transfer	Transaction Costs	Takeover Defense	Under-valuation
Maupin et al. (1984)	1972–83 U.S.	63	MBO	Discriminant analysis	-	No	-	No	-	-	-	Yes
Lehn and Poulsen (1989)	1981–85 U.S.	102	All	Logistic regressions	No	-	-	Yes	-	-	Inconcl.	No
Kieschnick (1989)	1980–87 U.S.	263	MBO	Logistic regressions	No	-	-	No	-	No	-	Yes
Kieschnick (1998)	1980–87 U.S.	263	All	Logistic regressions	Yes	-	-	No	-	-	Yes	No
Ippolito and James (1992)	1980–87 U.S.	169	All	Logistic regressions	-	-	-	Inconcl.	Inconcl.	-	-	-
Opler and Titman (1993)	1980–90 U.S.	180	All	Logistic regressions	No	-	-	Yes	-	-	-	-
Halpern et al. (1999)	1981–85 U.S.	126	All	Multinomial Logistic regressions	Yes	No	-	No	-	-	Yes	-

Kosedag and Lane (2002)	1980–96 U.S.	21	All	Logistic regressions	Yes	-	-	No	-	-	-	-
Weir et al. (2004)	1998–01 U.K.	117	All	Logistic regressions	-	Inconcl.	No	No	-	-	-	-
Weir et al. (2005a)	1998–00 U.K.	95	All	Logistic regressions	No	Yes	Yes	No	-	-	No	-
Weir et al. (2005b)	1998–00 U.K.	84	All	Logistic regressions	No	Yes	Yes	No			No	Yes
Billett et al. (2008)	1980–06 U.S.	562	All	Logistic regression	-	-	-	Yes	Yes	-	-	Yes
Mehran and Peristiani (2009)	1990–09 U.S.	169	All	Hazard model	-	-	-	Yes	-	Yes	-	Yes
Fidrmuc et al. (2007)	1997–03 U.K.	5475	MBOs	Multinomial Logistic regressions	No	Yes	-	No	-	-	Yes	Yes
			PE-backed buyouts		No	No	-	No	-	-	Yes	Yes

Notes: This table shows the studies that refer to strand 1 of public-to-private research. Yes = supportive, No = unsupportive, Inconcl. = inconclusive.

Transaction type refers to which types of deals were considered in the paper: All = all going-private deals. MBO = MBO deals only.

have been empirically investigated for several groups of stakeholders, though the majority of the empirical literature has focused on those of the prebuyout (selling) shareholders.

Methodological Issues

Essentially there are two ways to measure the shareholder wealth effects in PTP research: abnormal return estimation and premiums analysis (see Renneboog et al. 2007 for the methodological discussion). Abnormal returns are calculated to measure the information effect of an event on the market value of a firm. They compare the expected return, based on an asset pricing model such as the capital asset pricing model, to the return observed once the information is released. Table 4.5 presents the results of event studies in going-private research. The typical abnormal return at the announcement of an MBO or LBO appears to be around 20 percent, with most of the buyout information generally incorporated in the share price from one day before until one day after the event date. This 20 percent abnormal return seems to be rather low compared to the 25 to 30 percent range for tender offers and mergers.[5] An alternative methodology (premiums analysis) to measure the wealth effect calculates the real premium paid in the transaction. This premium is the difference in the firm value between the final takeover share price and the pre-announcement price of the firm. As Table 4.6 shows, the average premiums vary around 45 percent. As can be observed from Tables 4.5 and 4.6, the short-term wealth effects measured by abnormal returns and premiums are very different. Several explanations account for this difference. First, abnormal returns are corrected for the expected return, whereas the reported average premiums are not. Second, part of the difference can also be attributed to the fact that abnormal returns that capture the market expectations of the future profits of the buyout include the probability that a bid fails, whereas the premium does not.

Empirical Results

Shareholder-Related Agency Cost Hypotheses

Lehn and Poulsen (1989) find that the premiums depend on the level of free cash flows. When partitioning the sample based on managerial ownership, the free cash flow variable proves insignificant for equity stakes above the median. This is consistent with the free cash flow hypothesis, as the agency costs are higher in the firms with low levels of managerial ownership. Kieschnick (1998) revisits the Lehn and Poulsen sample and reaches the opposite conclusions after accounting for outliers and redefining the variables. His results are not supportive of the free cash flow hypothesis.

With respect to the effects of managerial ownership, Frankfurter and Gunay (1992) demonstrate that the incentive realignment hypothesis is upheld. The level of insiders' net divestment is a significantly positive determinant of abnormal returns. This confirms that the incentive realignment hypothesis does not hold for pretransaction firms with large managerial ownership, which Halpern et al. (1999)

Table 4.5 Cumulative Average Abnormal Returns in Event Studies of Public-to-Private Transactions

Study	Sample Period/ Country	Type of Deal	Event Window	Observations	CAAR (%)
DeAngelo et al. (1984)	1973–80 U.S.	All	–1,0 days –10,10 days	72 72	22.27*** 28.05***
Torabzadeh and Bertin (1987)	1982–85 U.S.	All	–1,0 months –1,1 months	48 48	18.64*** 20.57***
Lehn and Poulsen (1989)	1980–87 U.S.	All	–1,1 days –10,10 days	244 244	16.30*** 19.90***
Amihud (1989)	1983–86 U.S.	MBO	–20,0 days	15	19.60***
Kaplan (1989a)	1980–85 U.S.	MBO	–40,60 days	76	26.00***
Marais et al. (1989)	1974–85 U.S.	All	0,1 days –69,1 days	80 80	13.00*** 22.00***
Slovin et al. (1991)	1980–88 U.S.	All	–1,0 days –15,15 days	128 128	17.35*** 24.86***
Lee (1992)	1973–89 U.S.	MBO	–1,0 days –69, 0 days	114 114	14.90*** 22.40***
Frankfurter and Gunay (1992)	1979–84 U.S.	MBO	–50,50 days –1,0 days	110 110	27.32*** 17.24***
Travlos and Cornett (1993)	1975–83 U.S.	All	–1,0 days –10,10 days	56 56	16.20*** 19.24***
Lee et al. (1992)	1983–89 U.S.	MBO	–1,0 days –5,0 days	50 50	17.84*** 20.96***
Van de Gucht and Moore (1998)	1980–92 U.S.	All	–1, 1 days –10,10 days	187 187	15.60*** 20.20***
Goh et al. (2002)	1980–96 U.S.	All	–20,1 days 0,1 days	323 323	21.31*** 12.68***
Andres et al. (2003)	1996–02 EU	All	–1,1 days –15,15 days	99 99	15.78*** 21.89***
Renneboog et al. (2006)	1997–03 U.K.	All	–1,0 days –5,5 days –40,40 days	177 177 177	22.68*** 25.53*** 29.28***
Billett et al. (2008)	1980–1990 1991–2006	All	–60, 3 days	195 212	28.74 24.13 Difference: 4.61*
Brown et al. (2009)	1980–2001	All	–1,1 days	352	18.58***

Notes: This table shows all papers that estimate the shareholder wealth effects using event study analysis.

***, **, * stand for statistical significance at the 1, 5, and 10% level, respectively.

All = all going-private deals. MBO = MBO deals only.

Table 4.6 Premiums Paid above Market Price to Take a Firm Private

Study	Sample Period/ Country	Type of Deal	Anticipation Window	Observations	Mean Premium Offered (%)
DeAngelo et al. (1984)	1973–80 U.S.	All	40 days	72	56.3
Lowenstein (1985)	1979–84 U.S.	MBO	30 days	28	56.0
Lehn and Poulsen (1989)	1980–87 U.S.	All	20 days	257	36.1
Amihud (1989)	1983–86 U.S.	MBO	20 days	15	42.9
Kaplan (1989a, 1989b)	1980–85 U.S.	MBO	2 months	76	42.3
Asquith and Wizman (1990)	1980–88 U.S.	All	1 day	47	37.9
Harlow and Howe (1993)	1980–89 U.S.	All	20 days	121	44.9
Travlos and Cornett (1993)	1975–83 U.S.	All	1 month	56	41.9
Easterwood et al. (1994)	1978–88 U.S.	MBO	20 days	184	32.9
Weir et al. (2005a)	1998–2000 U.K.	All	1 month	95	44.9
Renneboog et al. (2007)	1997–2003 U.K.	All	20 days	177	41.0
Guo et al. (2009)	1990–2006 U.S.	All	1 month	192	29.2

Notes: This table shows all papers that estimate the shareholder wealth effects of going private through premiums analysis. The results are not independent due to partially overlapping samples.

***, **, * stand for statistical significance at the 1, 5, and 10% level, respectively.

All = all going private deals. MBO = MBO deals only.

confirm. They cross-sectionally analyze the buyout premiums and reveal a U-shaped relation between managerial equity ownership and buyout premiums for poorly performing firms. This evidence shows that for firms in which managers already own a large equity stake, the reunification of ownership and control is not the prime motive to go private.

Travlos and Cornett (1993) jointly test the hypotheses about taxation, bondholder wealth transfers, asymmetric information, transaction costs, and agency

costs in a cross-sectional analysis. The industry-adjusted price-earnings ratio is deemed to be an inverse proxy for agency costs and proves to be a statistically significant variable negatively influencing abnormal returns. Consistent with DeAngelo et al. (1984), the authors find that the stock price reaction to MBO announcements is significantly higher than for third-party transactions (MBIs and IBOs).

Oxman and Yildirim (2007) examine the pricing of PTP deals in the 1990s takeover wave and the impact of the expansion of buyout funds. Premiums are actually lower now than during the previous buyout wave of the 1980s. The 1990s premiums are positively related to free cash flows and the interest rate on long-term debt. The negative relation between premiums and the operating margin and the Tobin's Q indicates that better performing firms attract lower premiums. So higher premiums are paid to firms that are not currently profitable but have greater growth potential. Therefore, Oxman and Yildirim conclude that the pricing of buyout deals in the current wave is based on fundamentals.

Renneboog et al. (2007) calculate both the cumulative average abnormal return (CAAR) and the average premium of U.K. PTP transactions that took place in 1997–2003. Although their paper supports the incentive realignment hypothesis, the pretransaction free cash flow has no impact, as previously observed in other U.K.-oriented work. However, the control hypothesis is a significant determinant of the shareholder wealth effects of going private, an effect that is especially strong in the presence of corporations as monitors. Andres et al. (2003) perform a similar study for a sample of European PTP transactions, but find significant support only for the control hypothesis. For an expanded European sample, Andres et al. (2007) show that LBO announcement abnormal returns amount to 24.20 percent. The positive gains are significantly related to the improvement in blockholder monitoring. They also state that those PTP firms that were undervalued relative to a peer group of public listed firms exhibit higher abnormal returns, implying that the market corrects the past undervaluation at the announcement of the transaction. Considering the effect of regulation, the PTP transactions occurring in countries with comparatively weak shareholder protection generate larger wealth effects.

Hypotheses Related to Wealth Transfers

In relation to the bondholder wealth transfer hypothesis, Marais et al. (1989) report a nonsignificant correlation between prebuyout debt ratios and abnormal returns. A significant positive relation would have confirmed that in firms with high pretransaction debt ratios, the bondholder wealth transfer could contribute to the premiums paid to shareholders to take the firm private. Warga and Welch (1993) show that in going-private transactions, an increase of $1 in the firm market value of equity is associated with a 5 cents decrease in the overall value of debt. Likewise Asquith and Wizman (1990) show that a bondholder wealth transfer to the shareholders exists but is small. Their estimate of abnormal losses to bondholders is only 3.2 percent of the gains made by shareholders. This evidence confirms that the bondholder wealth transfer hypothesis cannot be rejected, but also that bondholder

expropriation cannot be a principal source of wealth gains to shareholders in PTP transactions. Andres et al. (2003) are the first to test for the employee wealth transfer hypothesis, but find no support for it. Brown et al. (2009) investigate the wealth losses for suppliers of the firms that go private. The suppliers face –1.36 percent CAARs around the announcement date. This implies that the LBO will contribute less to future suppliers' profits, possibly due to increased bargaining power of LBO firms. The divestments by postbuyout firms will further reduce the demand for suppliers' goods.

Tax Benefit Hypothesis

Kaplan (1989b) argues that tax benefits constitute an important source of wealth gains in going-private transactions. His models show that 76 percent of the total tax shield is paid out as a premium to those investors selling out. This supports his claim that predictable potential tax benefits are appropriable by pretransaction investors in a competitive market for corporate control. Lehn and Poulsen (1989) find that the potential for tax savings is not a significant determinant in the cross-sectional variation of premiums. Again Kieschnick (1998) reaches an opposite conclusion and supports Kaplan's (1989b) claim that potential tax savings and firm size have a positive impact on the wealth gains in LBOs. For the United Kingdom, Renneboog et al. (2007) reject the tax benefit hypothesis. Both Dicker (1990) and Weir et al. (2005a) point out that the tax advantages of financing firms with debt are smaller in the United Kingdom than in the United States.

Transaction Costs Hypothesis

Travlos and Cornett (1993) are the first to test the hypothesis of transaction costs savings by employing annual costs of listing according to NYSE and AMEX fee schedules (scaled by the market value of equity), but conclude that this hypothesis is not upheld, perhaps reflecting the fact that the true costs of a stock market quotation are much higher than just the listing costs. Renneboog et al. (2007) do show some support for the transaction costs hypothesis: the savings realized by the direct and indirect costs of a listing significantly contribute to the shareholder wealth effects from going private.

Undervaluation Hypothesis

Harlow and Howe (1993) find that going-private premiums paid by third parties are on average 11 percent higher than the premiums paid by management teams, with the typical MBO premium being 39 percent. The correlation of these premiums with various measures of insider trading is only significant for the MBO subgroup. This suggests that insider net buying before an MBO conveys favorable information to the market and constitutes some support to the undervaluation hypothesis. Kaestner and Liu (1996) reach similar conclusions: MBO-related abnormal buying prior to the PTP announcement is not driven by free

cash flows or past tax liabilities but by superior knowledge about the true value of the firm.

Goh et al. (2002) investigate analysts' earnings forecast revisions at the PTP announcement. They report a significant upward revision of earnings forecasts for institutional buyins, but find that this phenomenon is significantly less pronounced for MBOs. Whereas they find no significant support for the free cash flow hypothesis or any effect induced by a change in leverage, the authors show that abnormal revisions of analysts' forecast earnings are positively related to the abnormal returns of the PTP announcement. These findings convince the authors that going-private announcements indeed convey favorable information about future earnings. In contrast, Lee (1992) reports that there are no sustained shareholder wealth increases from MBO announcements that are subsequently withdrawn. This result suggests that going-private announcements do *not* convey favorable information on future earnings.

Renneboog et al. (2007) find strong support for the undervaluation hypothesis in the United Kingdom; past share price performance is a significant determinant of shareholder wealth gains for MBOs and IBOs, confirming that the latter are best placed to exploit undervaluation due to informational asymmetries. Andres et al. (2003) find a significantly negative relation between the target's share price development and the level of the abnormal returns for Continental Europe. This also implies support for the undervaluation hypothesis. Cao et al. (2010) report a strong link between legal conditions and LBOs, with LBOs occurring more frequently in countries with strong creditor rights. The premiums offered to shareholders are on average negatively correlated with creditor rights for both domestic and cross-border LBOs.

Bidder Competition

PTP transactions with multiple bidders are associated with higher premiums. For instance, Lowenstein (1985) calculates that the premiums paid to shareholders in MBO transactions involving three or more competing bidders were on average 19 percent higher than the premiums paid in cases with a single bidder. Similarly Easterwood et al. (1994) show that the premium in a multiple-bidder process is about 17 percent higher. The interpretation of these higher premiums in contested LBOs is not straightforward and is empirically insufficiently explored. Higher premiums in contested bids may occur due to private equity overpayment resulting from irrationality or "deal fever" (see, e.g., Andres et al. 2003). Alternatively, though, contested LBOs may signal severe undervaluation, in which case a higher premium is justified.

Empirical Results on Divisional Buyouts

Studies on divisional buyouts focus on the effects on parent shareholders. Bae and Jo (2002) and Hite and Vetsuypens (1989) argue that there are considerable differences

between divisional and whole-firm buyouts. It is expected that divisional buyouts suffer less from the absence of arm's-length bargaining because the parent company's management negotiates with the divisional buyout team. Therefore a conflict-prone role of managers in MBOs is likely not to arise. Briston et al. (1992) find negative returns of –1.79 percent to parent shareholders. Apparently divisional managers still succeed in negotiating a relatively low price for the assets they buy from the parent company. This contradicts the findings of U.S. divisional MBOs (Muscarella and Vetsuypens 1990), in which the parent shareholders do not lose, on average.

Synthesis: Impact

Table 4.7 summarizes this second strand of the literature. First, several studies report support for the undervaluation hypothesis. Second, bondholder wealth transfers seem to exist, and it is especially the bondholders without sufficiently protective covenants who lose out. Other wealth transfer (or expropriation) hypotheses have been only rarely been tested directly, but the suppliers of prebuyout firms seem to lose out as a result of the PTP transaction. Third, the evidence on shareholder-related agency costs hypotheses, more specifically the incentive realignment and free cash flow hypotheses, is mixed. There is evidence that the incentive realignment hypothesis is valid only for firms in which pretransaction managers hold small equity stakes. There is, however, strong evidence of the positive influence of blockholder monitoring on buyout returns. Fourth, the increased tax shields from going private might be a source of wealth gains, but this evidence is mixed. Fifth, it is remarkable that most of the evidence in this strand of the literature—with the exception of a paper on U.K. divisional buyouts and another on the second PTP wave—comes from the United States. This calls for systematic research on this strand from other parts of the world.

Third Strand: Process

So far I have discussed the empirical results of the determinants of the firm-specific probability of going private and how much acquirers generally pay in order to obtain the required proportion of shares to delist the company. After these two initial phases, the firm starts a new life away from public scrutiny and usually somewhat disappears from the public forum. Fox and Marcus (1992) remark that it is imperative that these firms do not vanish from the academic radar. After all, the scientific debate about the real role of leveraged going-private transactions, being either more efficient organizational forms or simply vehicles to gain tax benefits, cannot possibly be resolved without detailed studies of the posttransaction performance. After the acquiring party has paid a premium to take the company private, the process by which it recovers these out-of-pocket costs and puts the resources under its control to a more valuable use can result in interesting insights into the real sources of wealth gains from buyouts.

Table 4.7 Summary of the Second Strand of the Literature: Impact

Study	Sample Period/ Country	Obser-vations	Type of Deal	Event Window	CAAR (%)	Anticipation Window	Premium (%)	Tax	Incentive Realign-ment	Control	Free Cash Flow	Wealth transfer	Transaction cost	Defensive	Under value	Bidder competi-tion
DeAngelo et al. (1984)	1973–80 U.S.	72	All	-1,0 days -10,10 days	22.27*** 28.05***	40 days	56.3	-	Inconcl.	Inconcl.	-	-	-	-	-	-
Lowenstein (1985)	1979–84 U.S.	28	MBO	-	-	30 days	56.0	-	-	-	-	-	-	-	-	Yes
Torabzadeh and Bertin (1987)	1982–85 U.S.	48	All	-1,0 months -1,1 months	18.64*** 20.57***	-	-	-	-	-	-	-	-	-	-	-
Lehn and Poulsen (1989)	1980–87 U.S.	244	All	-1,1 days -10,10 days	16.30*** 19.90***	20 days	36.1	No	-	-	Yes	-	-	-	-	-
Amihud (1989)	1983–86 U.S.	15	MBO	-20,0 days	19.60***	20 days	42.9	-	-	-	-	-	-	-	-	Yes
Kaplan (1989a, 1989b)	1980–85 U.S.	76	MBO	-40,60 days	26.00***	40 days	42.3	Yes	-	-	-	-	-	-	-	-
Marais et al. (1989)	1974–85 U.S.	80	All	0,1 days -69,1 days	13.00*** 22.00***	-	-	-	-	-	-	No	-	-	-	-
Asquith and Wizman (1990)	1980–88 U.S.	47	All	-	-	1 day	37.9	-	-	-	-	No	-	-	-	-
Lee (1992)	1973–89 U.S.	114	MBO	-1,0 days -69, 0 days	14.90*** 22.40***	-	-	-	-	-	-	-	-	-	No	-
Lee et al. (1992)	1983–89 U.S.	50	MBO	-1,0 days -5,0 days	17.84*** 20.96***	-	-	-	-	-	-	-	-	-	-	Yes
Frankfurter and Gunay (1992)	1979–84 U.S.	110	MBO	-50,50 days -1,0 days	27.32*** 17.24***	-	-	Yes	No	-	Yes	-	-	-	-	-

(*continued*)

Table 4.7 (continued)

Study	Sample Period/ Country	Obser-vations	Type of Deal	Event Window	CAAR (%)	Anticipation Window	Premium (%)	Tax	Incentive Realign-ment	Control	Free Cash Flow	Wealth transfer	Transaction cost	Defensive	Under value	Bidder competi-tion
Travlos and Cornett (1993)	1975–83 U.S.	56	All	-1,0 days -10,10 days	16.20*** 19.24***	1 month	41.9	Inconcl.	Inconcl.	Inconcl.	Inconcl.	No	No	-	Yes	-
Harlow and Howe (1993)	1980–89 U.S.	121	All	-	-	20 days	44.9	-	-	-	-	-	-	-	Yes	-
Easterwood et al. (1994)	1978–88 U.S.	184	MBO	-	-	20 days	32.9	-	-	-	-	-	-	-	-	Yes
Halpern et al. (1999)	1981–85 U.S.	126	All	-	-	-	Not mentioned	No	No	-	No	-	-	-	-	Yes
Goh et al. (2002)	1980–96 U.S.	323	All	-20,1 days 0,1 days	21.31*** 12.68***	-	-	-	-	-	-	-	-	-	Yes	-
Andres et al. (2003)	1996–02 EU	99	All	-1,1 days -15,15 days	15.78*** 21.89***	-	-	No	No	Yes	No	No	-	-	Yes	-
Renneboog et al. (2006)	1997–03 U.K.	177	All	-1,0 days -5,5 days -40,40 days	22.68*** 25.53*** 29.28***	20 days	41.0	No	Yes	Yes	No	-	Yes	No	Yes	Yes
Andres et al. (2007)	1997–05 Conti-nental Europe	115	All	-30, 30 days	24.20***	250 days	-	-	No	Yes	No	-	-	-	Yes	-
Oxman and Yildirim (2007)	1986–2005 U.S.	164	All	-	-	-	29.16 (small targets) 33.76 (big targets)	No	-	-	Yes	-	-	-	Yes	-

Notes: This table shows the most important papers that deal with strand 2 of public-to-private research. Yes = supportive, No = unsupportive, Inconcl. = inconclusive. All estimated shareholder wealth effects from Tables 4.3 and 4.4 are reproduced here. ***, **, * stand for statistically significant at the 1, 5, and 10% level, respectively.

All = all going private deals, MBO = MBO deals only.

Methodological Issues

In general, quantitative studies suffer from three econometric challenges. First, the data availability is problematic, as private firms do not have to comply with detailed disclosure of financial information. Furthermore the available information of private firms induces a size bias because larger private firms still release more information than smaller firms. Second, Smart and Waldfogel (1994) and Palepu (1990) claim that quantitative studies mistakenly compare posttransaction performance to pretransaction performance: posttransaction performance should instead be compared to pretransaction *expected* performance in order to ascertain whether or not performance improvements are attributable to the LBO process. A third econometric problem is that some papers only match LBO firms with non-LBO firms without controlling for industry and year effects. A small number of studies employ the case study methodology. Yin (1989) argues that case studies can provide us with more direct answers through their ability to deal with research settings with a large number of variables or where variables tend to be qualitative. Case studies can therefore better explore the organizational links between going private and performance improvements (Baker and Wruck 1989).

Empirical Results

In this section I describe the most important papers from this large body of empirical work on the postbuyout wealth creation process. The quantitative studies are subdivided into two sections for (1) the firms under private ownership and (2) the reverse LBOs. I will refer to interesting case studies following this and then discuss the effect of financial distress in buyouts.

Firms Under Private Ownership

Kaplan (1989a) analyzes the posttransaction operating performance of MBOs from the early 1980s. He finds that industry-adjusted operating income does not increase during the first two years subsequent to the buyout, but grows by 24.1 percent in the third year. When one controls these findings for divestitures, the bought-out firms even strongly outperform their public counterparts in every postbuyout year. Kaplan also documents that industry-adjusted capital expenditures fall significantly after the buyout, which is in line with the curbing of management's "empire-building tendencies" provided that prebuyout firms had large levels of free cash flows. However, in bought-out firms that do not generate high free cash flow, restricting capital expenditures may signal an underinvestment problem induced by the debt burden. Both Smith (1990) and Kaplan (1989a) show evidence that the postbuyout operating performance (median operating cash flow per employee and per dollar of asset value) increases more than the industry median from the year prior to the transaction to two years after the transaction. Tighter working capital management seems to be a small contributing factor, but a reduction of spending on discretionary items or capital expenditures cannot explain the improved

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operating performance. Smart and Waldfogel (1994) revisit Kaplan's (1989a) sample and compare performance against prebuyout *expected* performance, but still show similarly strong operating performance improvements.

Muscarella and Vetsuypens (1990) perform a similar exercise for reverse LBOs. Restructuring activities explain the strong improvements in efficiency after an MBO. They argue that the premium is more likely to capture the efficiency improvements in divisional buyouts than in whole-firm buyouts. The reason is that there is less asymmetric information in relation to a divisional MBO than in a whole-firm going-private transaction because in the former case the negotiating management teams are both insiders. Efficiency gains reflect real operating gains; the accounting variables show that these improvements result mostly from cost cutting and not from the generation of more revenues. Divisional buyouts indeed appear to have more pronounced efficiency gains, which gives more support to the undervaluation hypothesis for whole-firm MBOs. In contrast, neither Kaplan (1989a) nor Smith (1990) supports the undervaluation hypothesis. Kaplan observes that pre-MBO financial projections, upon which the offer price will be based, systematically overstate the future realizations. Smith observes that cash flows tend not to increase after a failed buyout proposal. Postbuyout cash-generative characteristics of defensive and nondefensive transactions do not differ, which undermines the undervaluation hypothesis that MBOs are motivated by private information held by the management.

The papers just discussed also elaborate on the effects of a PTP transaction on the firm's employees. When controlling for reduced employment resulting from posttransaction divestitures, Kaplan (1989a) reports that median employment actually rises by 0.9 percent. Muscarella and Vetsuypens (1990) report that going-private transactions do not cause layoffs. Smith (1990) confirms these results and also notes that the number of employees from the year before the MBO until the year after the deal grows more slowly than the industry average. In addition to the U.S. studies, Amess and Wright (2007) qualify the effects of U.K. LBOs on wages and employment and find that LBOs do not have a significant impact on employment growth but have significant lower wage growth than non-LBOs. Their evidence indicates that MBIs are more likely than MBOs to break implicit agreements and transfer wealth from employees to new owners.

Liebeskind et al. (1992) investigate the incentive realignment hypothesis by testing if and how corporate restructuring affects the firm and its posttransaction strategy. They find that managers of going-private firms resort to more downsizing of their businesses and to less expansion of production lines. However, the business mix of the corporate portfolios does not change. Apparently the incentive realignment following the buyout induces managers to pursue a focus strategy and to forgo excess growth.

Jones (1992) focuses on the use of accounting control systems in the new firm after going private. He finds that an improvement in operational efficiency was achieved through modifications of the organizational structure. Going private led to improved planning techniques that match the organizational context better. Zahra (1995) uses interview data to uncover the role of entrepreneurship in performance improvements in the postbuyout process for LBOs of nonlisted firms. He

documents that, even with a high debt burden, innovation and risk-taking is not stifled. Postbuyout performance improvements arise from an increased emphasis on commercialization and R&D alliances, as well as from an improved quality of the R&D function and intensified venturing activities. Without establishing a statistical relationship, Zahra (1995, 241) explains that this revamped entrepreneurial spirit could be the result of reduced shareholder-related agency costs.

Long and Ravenscraft (1993) confirm Kaplan and Stein's (1993) finding that the performance gains for LBOs and MBOs completed in the latter half of the 1980s decline, but performance and efficiency improvements remain substantial. For instance, Opler (1992) calculates that for the twenty largest transactions in the 1985–90 period, operating profits per dollar of sales rise by 11.6 percent on an industry-corrected basis. Per employee, this increase is even as high as 40.3 percent. In addition, leveraged going-private transactions do not seem to decrease spending on R&D. Guo et al. (2009) investigate the value creation of the recent LBO wave and report that the increase in leverage and the improved corporate governance activities enhance operating performance of postbuyout firms. However, most of the returns realized in LBO firms mainly result from the increase in industry valuation multiples and the realized tax benefits rather than operating gains.

Reverse LBOs

Some papers have focused on the phenomenon of reverse LBOs. Degeorge and Zeckhauser (1993) model that asymmetric information, debt overhang, and behavioral problems can create a pattern of superior performance before the reverse LBO (the private stage) and disappointing results afterward (the public stage). Their empirical study confirms their hypothesis. Holthausen and Larcker (1996) expand this study by analyzing the value drivers of the accounting performance for ninety reverse LBOs. They find that, although leverage and insider equity ownership are reduced in reverse LBOs, both remain high relative to the industry-adjusted numbers of quoted firms. Thus they argue that reverse LBOs are in fact hybrid organizations because they retain some of the characteristics of an LBO after the flotation. Their regression analysis strongly upholds the incentive realignment hypothesis. For at least four years after a secondary IPO, these firms outperform their industries on an accounting basis performance but experience a performance decline afterward (which Bruton et al. 2002 confirm). Holthausen and Larcker speculate on the causes for this lagged effect of performance reduction; they believe that reverse LBOs gradually lose their typical LBO characteristics and evolve toward the typical firm of the industry. They also find that capital expenditures increase and R&D expenditures decrease after the IPO, but that reverse LBO firms seem to be more efficient with respect to working capital requirements. Like Degeorge and Zeckhauser (1993) and Mian and Rosenfeld (1993), they do not find stock price underperformance until at least four years after flotation. Apparently reverse LBOs are rationally priced and do not suffer from long-term underperformance (Ritter 1991). In a recent study Cao and Lerner (2009) confirm that reverse LBOs consistently outperform other IPOs and the market as a whole.

Case Study Results

Some interesting clinical studies have explored the organizational links between going private and performance improvements. Investigating the MBO at O. M. Scott & Sons Company, Baker and Wruck (1989) confirm the results of large-sample studies that high leverage and managerial equity ownership lead to improved incentives and, subsequently, to improved performance. Of equal importance in terms of their contribution to performance, however, are the restrictions imposed by debt covenants, the emphasis on managerial compensation (and its incentives), the decentralization of decision making, and the relation Scott managers had with the third-party buyout team of Clayton & Dubilier partners. Baker and Wruck conclude that the performance improvements were related to some specific organizational characteristics of leveraged buyouts, and not just because these improvements were not made before, when the firm was still in public hands.

Denis (1994) provides evidence that looks at least as convincing by comparing a leveraged recapitalization (Kroger Co.) with an LBO (Safeway Stores, Inc.). He finds that, although both firms dramatically increase leverage, the improved managerial equity ownership, boardroom change, monitoring by an LBO specialist firm, and executive compensation associated with the LBO are responsible for the more productive cash generation in Safeway Stores. Still Denis acknowledges that the leveraged recapitalization did generate performance improvements. This paper suggests that an LBO is not only about leveraging the businesses; it is a completely different organizational form with its own value-improving characteristics. This implies that not all, but part of the gains from going private can be attributed to the new organizational form of an LBO.

Financial Distress of LBOs

Although there are case studies on individual going-private firms in trouble (see, e.g., Bruner and Eades 1992; Wruck 1991) as well as some large-sample studies (e.g., Andrade and Kaplan 1998; Easterwood 1998), research directly testing the effects of recessionary conditions is scarce. Nevertheless Wright et al. (1996) find that the probability of failure of buyouts and buyins of unquoted companies is reduced due to the existence of managerial incentive plans and well-timed corporate restructuring. Consistent with Bruner and Eades, they find that excessive leverage is a strong predictor for failure when macroeconomic conditions turn sour. Denis and Denis (1995) confirm that regulatory developments as well as a recession (or industrywide downturns) strongly negatively influence the survival probability.

Synthesis: Process

Table 4.8 summarizes the main results discussed in this section. I conclude that the empirical research has confirmed that the posttransaction performance improvements are in line with those anticipated at the announcement of a going-private transaction. The causes of the performance and efficiency improvements are primarily the

Table 4.8 Summary of the Third Strand of Literature: Process

Study	Sample Period/ Country	N	Transaction Type	Tax	Incentive Realignment	Control	Free Cash Flow	Wealth Transfer	Transaction Costs	Takeover Defense	Undervaluation
Kaplan (1989a)	1980–85 U.S.	76	MBO	-	Yes	-	-	No	-	-	No
Baker and Wruck (1989)	1986 U.S.	1 case	MBO	-	Yes	Yes	Yes	No	-	-	No
Smith (1990)	1977–86 U.S.	58	MBO	-	Yes	-	-	No	-	-	No
Muscarella and Vetsuypens (1990)	1973–85 U.S.	151	MBO	-	Yes	Yes	-	No	-	-	Yes
Lichtenberg and Siegel (1990)	1981–86 U.S.	244	All	-	-	Yes	-	No	-	-	-
Jones (1992)	1984–85 U.S.	17	MBO	-	Yes	-	-	-	-	-	-
Opler (1992)	1985–89 U.S.	45	All	Yes	Yes	-	-	-	-	-	Inconcl.
Liebeskind et al. (1992)	1980–84 U.S.	33	All	-	Yes	-	-	-	-	-	-

(*continued*)

Table 4.8 (continued)

Study	Sample Period/ Country	N	Transaction Type	Tax	Incentive Realignment	Control	Free Cash Flow	Wealth Transfer	Transaction Costs	Takeover Defense	Undervaluation
Green (1992)	1980–84 U.K.	8 cases	MBO	-	No	-	-	-	-	-	-
Long and Ravenscraft (1993)	1978–89 U.S.	48	All	Yes	-	-	Yes	-		-	-
Denis (1994)	1986 U.S.	2 cases	LBO	-	Yes	Yes	Yes	-		-	No
Zahra (1995)	1992 U.S.	47	All	-	Inconcl.	Inconcl.	Inconcl.	-		-	-
Robbie and Wright (1995)	1987–89 U.K.	5 cases	MBI	-	Yes	Yes	-	-		-	Yes
Holthausen and Larcker (1996)	1983–88 U.S.	90	All	-	Yes	-	No	-		-	-
Bruton et al. (2002)	1980–88 U.S.	39	All	-	Yes	-	-	-		-	-
Harris et al. (2005)	1994–98 U.K.	35,752 (establishments)	MBO	-	Yes	-	-	-		-	-

Notes: This table shows the most important papers that deal with strand 3 of the public-to-private research. Yes = supportive, No = unsupportive, Inconcl. = inconclusive. Type of deal: All refers to all going private transactions, MBO and MBI stand for management buyout and management buyin transactions, respectively.

organizational structure of the leveraged buyout (characterized by high leverage and strong [managerial] ownership concentration). Almost unambiguously, the studies in this strand of the literature support the role of incentive realignment in the postbuyout value-creating processes, while the employee wealth transfer hypothesis is unanimously discarded. While the undervaluation hypothesis remains disputed, the free cash flow theory appears to find more support in this strand of the literature than in others. Nevertheless the empirical work on postbuyout processes seems far from complete and will require more studies of long-run performance.

Fourth Strand: Duration

Jensen (1989) argues that LBO firms constitute a superior organizational form to publicly held firms due to the better incentives they offer to managers and monitors. Management incentives relating pay to performance, decentralization of control, high leverage, and other bonding or precommitment agreements, combined with reputational concerns of the LBO sponsors, reduce the agency cost problems inherent in the structure of the public corporation in low-growth industries. Rappaport (1990: 101) contests Jensen's proclaimed superiority of the LBO organization to public corporations, arguing that the latter are "vibrant, dynamic institutions—capable of long periods of underperformance, to be sure, but also fully capable of self-correction." In short, going private is shock therapy: after the necessary changes have been brought about under highly leveraged private ownership, the costs of inflexibility and illiquidity and the need for risk diversification will exceed the benefits of the LBO as an organizational form, with a return to public ownership as an inevitable consequence.

Empirical Results

To measure the duration of the private status of a firm (from LBO to SIPO), hazard functions are estimated. These models are designed to measure the "survival time." Kaplan (1991) was the first to formally address LBO duration and finds that companies that return to public ownership do so after a median time in private status of only 2.63 years. For his sample of 183 large U.S. going-private transactions from 1979 to 1986, he finds an unconditional median life of 6.82 years for whole-firm and divisional LBOs. Kaplan observes constant duration dependence in years 2 through 5, and negative duration dependence beyond this. This means that the likelihood of returning to public ownership is largest in years 2 to 5, while this likelihood decreases as time under private ownership increases beyond this period. This result leaves room for both the existence of Rappaport's (1990) arguments about the shock therapy of LBOs, as well as Jensen's (1989) idea that firms that go private will remain private for longer periods of time due to the advantages of incentive realignment. Consistent with Kaplan (1991), Holthausen and Larcker (1996) confirm that LBOs reversing to public ownership retain some of the characteristics they exhibited under private ownership.

Van de Gucht and Moore (1998) also explore the duration of the private status of LBOs, but do not unambiguously support Kaplan's (1991) results. Using a sample of 343 whole-firm and divisional buyouts from 1980 to 1992, they confirm the results found by Kaplan (1991, 1993) on the median conditional and unconditional duration of the private status. However, employing a split population hazard model that does not implicitly assume that all firms that went private eventually return to public ownership (as Kaplan 1991 does), they document a positive duration dependence until year 7, and negative dependence beyond that year. Divisional buyouts are found not to be significantly different from whole-firm going-private transactions in terms of their duration. Interestingly the climate of the financial markets significantly influences the reversion moment.

Wright et al. (1995) investigate the duration that buyouts and buyins stay private for a sample consisting of U.K. PTP transactions as well as buyouts of nonquoted firms, and both divisional and whole-firm buyouts and buyins. This study shows that, in line with the U.S. findings, the hazard coefficient increases strongly from approximately three to six years after the buyout, after which a negative duration dependence persists. Survivor analysis estimations show that size is a significantly negative determinant of the duration in buyouts.

Support for the contradicting claims of both Rappaport (1990) and Jensen (1989)—an LBO is needed for a short time period as shock therapy versus an LBO is an efficient organizational form even in the long run—is given by Halpern et al. (1999). The probability of remaining private is positively related to managerial shareholdings. A subsample of LBOs remains private only for a short time; these were usually—prior to the buyout—poorly performing firms with low managerial equity holdings. After restructuring the operations subsequent to the buyout, these firms regain a stock exchange quotation. Another subsample (firms with ex-ante high managerial shareholdings) seems to consider that the private status is the efficient form of organization and remains delisted.

Strömberg (2007) investigates the exit strategy and holding periods for an international sample of more than 21,000 LBOs over the period 1970–2007. He shows that previous analyses have underestimated the holding period of buyout targets. The median holding period for the secondary buyouts is actually remarkable long: more than nine years. In addition, the holding periods seems to increase over time, from six to seven years in the 1980s to nine years in 1995–99. MBOs remain in private ownership for more than ten years subsequent to the PTP transaction. Furthermore LBOs in Continental Europe are less likely to leave private status. Hence Stromberg concludes that the gains in LBO appear to result from the long-term effects of the change in organizational form rather than from shock therapy. The exceptions with short longevity are divisional LBOs and LBOs backed by experienced funds. In a recent paper Cumming and Johan (2010) show that there is a market difference between the ways by which the shareholders of LBOs exit. Whereas in Canada only 5 percent of exits occur via IPOs, this number amounts to 66 percent for the United States. Private sales constitute 55 percent of the U.S. exits and 75 percent of the Canadian ones. In Europe about 50 percent of the LBO exits are private sales, whereas in 17 percent of the exits the IPO exit channel is preferred.

Synthesis: Duration

Table 4.9 gives an overview of the main results of the papers discussed in this section and shows that there is a dichotomy between the firms that go private. Most firms seem to use the change in organizational form over the medium or long run to generate performance improvements.

Table 4.9 Summary of Previous Empirical Results for the Fourth Strand of Literature: Duration

Study	Sample Period/ Country	Type of Deal	Observations.	Main Result of the Study
Kaplan (1991)	1979–86 U.S.	All	183	After year 5, the conditional probability of returning to public ownership decreases.
Van de Gucht and Moore (1998)	1980–92 U.S.	All	343	Until year 7, the conditional probability of returning to public markets increases, while after seven years it decreases. The timing of reversion is influenced by the financial markets' climate.
Wright et al. (1994)	1981–92 U.K.	All	2,023	Ownership, financial, and market-related factors determine the duration of the private status.
Wright et al. (1995)	1983–86 U.K.	All	140	The conditional probability of reversion increases strongly between year 3 and year 6, and subsequently decreases.
Halpern et al. (1999)	1981–85 U.S.	All	126	Longevity of the private status is increasing in managerial equity stake.
Stromberg (2007)	1970–2007 Global	All	Over 21,000	Longevity of the private status increases over the recent wave. Private equity–backed LBOs are more likely to exit early than MBOs.
Cumming and Johan (2010)	1991–2004 Canada	All	557	Almost 75% of exits are private sales after 4 years, 20% are write-offs after 3.2 years, and 5% consist of exits via IPOs after 2.5 years.
Cumming and Johan (2010)	1991–2004 U.S.	All	1,607	Almost 55% of exits are private sales after 3.2 years, 10% are write-offs after 2.9 years, and 36% consist of exits via IPOs after 3 years.

Note: This table shows the most important papers that deal with strand 4 of public-to-private research. All stands for all going-private transactions (LBOs, MBOs. MBIs, IBOs).

International Public-to-Private Trends

An abundant body of empirical literature has documented the drivers of waves in merger and acquisition (M&A) activity (see, e.g., Martynova and Renneboog 2008; Andrade et al. 2001; Auster and Sirower 2002; Golbe and White 1993). Likewise LBO activity seems to occur in cycles (Smit and Van Den Berg 2006). The opportunities for value creation from PTP deals vary over time, which tunes the demand for private equity capital. The extent to which the supply of private equity capital can meet this demand depends on the economics of the private equity model in a given region or market. The economics are determined by, for example, the political economy and the general acceptance of LBOs as financial transactions, the capital market conditions, and the legal or fiscal infrastructure. Figures 4.2, 4.3, and 4.4 show the evolution of PTP volumes and values for the period 1979–2003 for the United States, the United Kingdom, and Continental Europe.

The financial crisis that emerged in the third quarter of 2007 has had a large impact on the M&A market in general and on the LBO market in particular. While the credit crisis was only commencing in that quarter, the transaction volume in the M&A market experienced a drop by 50 percent. The impact on the LBO market was even bigger: that market practically closed, and it dwindled to less than 5 percent of the M&A market. The financial system meltdown significantly reduced buyout firms' ability to attract the leverage needed to finance the transaction. The difficulties of structuring an LBO transaction between July 2007 and June 2010 stand in marked contrast with the ease of structuring deals between 2002 and 2006: "At the height of [mid-]2007, your grandmother could have done an LBO (by calling up a too-big-to-fail bank and getting a loan with no covenants," claims D. Bonderman from TPG Capital (Thomson Reuters, April 27, 2010). In the period

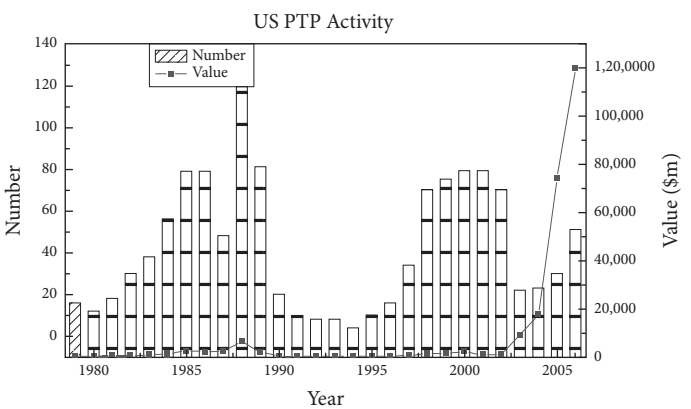

Figure 4.2 U.S. public-to-private activity. This figure shows the number of public-to-private transactions (left-hand scale) and the value in million USD (right-hand scale).
Source: Centre for Management Buyout Research/Barclays Private-equity/Deloitte & Touche.

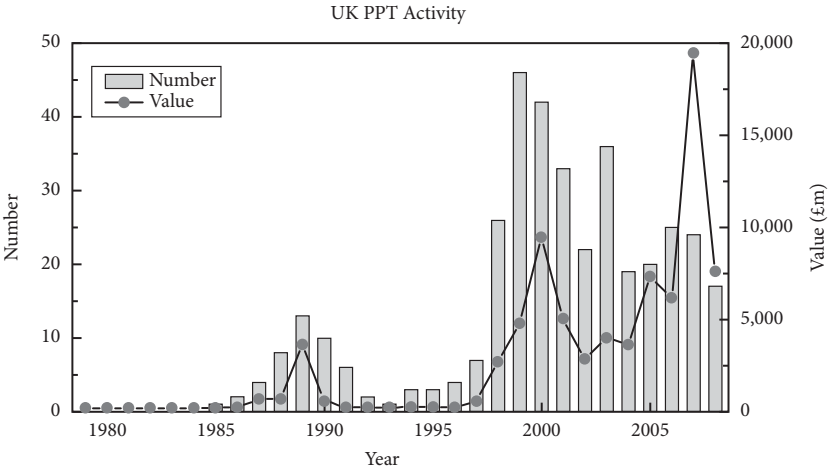

Figure 4.3 U.K. public-to-private activity. This figure shows the number of public-to-private transactions (left-hand scale) and the value in million GBP (right-hand scale).
Source: Centre for Management Buyout Research/Barclays Private-equity/Deloitte & Touche.

of overheating (2002–6), too much money was chasing a limited number of good deals, and this LBO market could be mainly fueled by the availability of too much debt financing and a relaxation of lenders' terms and conditions on debt financing in a low-interest-rate environment (Cui, 2009). As the subprime mortgage crisis spread, the subsequent credit crunch created severe liquidity and refinancing problems for LBOs.

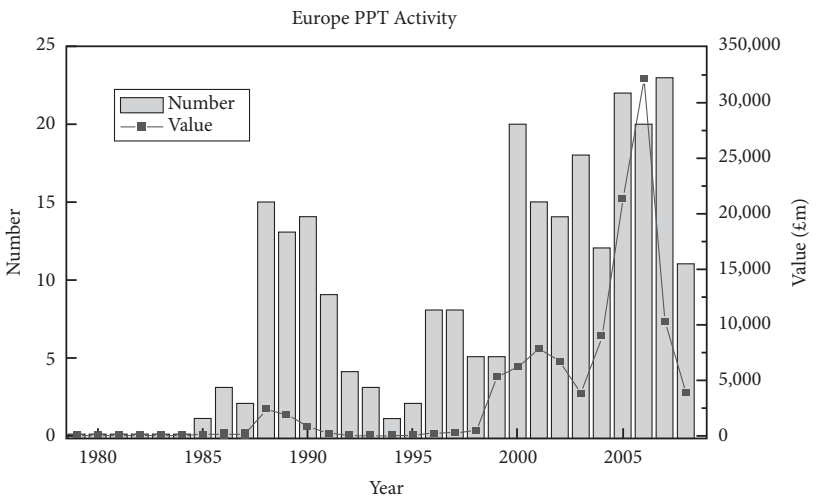

Figure 4.4 Continental European public-to-private activity. This figure shows the number of public-to-private transactions (left-hand scale) and the value in million euro (right-hand scale).
Source: Centre for Management Buyout Research/Barclays Private-equity/Deloitte & Touche.

Conclusion

In this chapter I related the main motives for public-to-private transactions (incentive realignment, free cash flow, blockholder monitoring, wealth transfers, tax benefits, transaction costs, takeover defense, undervaluation) to the different phases of the LBOs. These phases comprise intent (the decision to take a public firm private via an LBO), impact (the market reaction to the PTP transaction), process (the income generation in the private phase), and duration (the longevity of the private phase).

The tax shield is a major source of value, but the fact that firms with greater tax shields are more likely to go private does not necessarily mean that it is an important determinant. The reason is that, as it is straightforward to estimate the tax benefits of an LBO, the pretransaction shareholders are able to fully appropriate this tax benefit. It may therefore not be a motive for the parties initiating the LBO or MBO. Whereas the free cash flow hypothesis is only sporadically supported, the going-private decisions are frequently motivated by antitakeover defense strategies and by heavy listing costs. The undervaluation hypothesis receives mixed support.

Several studies on the market reaction to the announcement of the public-to-private decision report support for the undervaluation hypothesis. Another reason the announcement of abnormal returns can be high is that bondholder wealth transfers seem to exist. Especially the bondholders without sufficiently protective covenants lose out. The evidence on shareholder-related agency costs hypotheses, more specifically the incentive realignment and free cash flow hypotheses, is mixed. There is evidence that the incentive realignment hypothesis is valid only for firms in which pretransaction managers hold small equity stakes. There is, however, strong evidence on the positive influence of blockholder monitoring on buyout returns.

The empirical research has confirmed that the posttransaction performance improvements are in line with those anticipated at the announcement of a going-private transaction. Almost unambiguously, the studies support the role of incentive realignment in the postbuyout value-creating processes. While the undervaluation hypothesis remains disputed, the free cash flow theory also explains much of the value creation in the private phase of the PTP transaction.

Differences in corporate governance regulation will influence the sources of wealth creation through going-private transactions. Moreover the subtle idiosyncrasies in financial practices and culture on either side of the Atlantic further reduce the generalizability of U.S.-based results to the U.K. and Continental European situations. This implies that there is a strong need for further systematic multicountry research into the second leveraged buyout wave (1995–2000) and the past decade. First, future research should be directed toward analyses of the type of company that goes private. Second, future research should estimate and analyze the shareholder and bondholder wealth effects of public-to-private

transactions and investigate why (if at all) these wealth effects differ by corporate governance regime. Third, the process of the realization of wealth creation once the firm has been taken private should also attract research interest, as little is known about that LBO stage in particular. Fourth, future research should address the duration and its determinants of the private status of formerly public firms. Special attention could then be given to international comparisons and the role of going private as a corporate restructuring device in a multicountry setting.

Notes

1. This is an incentive device that enables management in a postbuyout firm to increase its equity holdings upon meeting specified performance targets.
2. The effects of the incentive realignment hypothesis at higher levels of managerial ownership are contested because entrenchment effects (McConnell and Servaes 1990) may render management—even in the wake of poor performance—immune to board restructuring and may delay corporate restructuring (Franks et al., 2001).
3. However, relying on debt to motivate managers may bring about significant agency costs of debt (e.g., an asset-substitution problem).
4. For a detailed overview of this literature on bond wealth effects, see Renneboog and Szilagyi 2006, 2008.
5. For the bid premiums in domestic and cross-border acquisitions in the United Kingdom and Continental Europe, see Goergen and Renneboog 2004; Goergen et al. 2005; Martynova and Renneboog 2010.

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CHAPTER 5

PRIVATE EQUITY AND PUBLIC CORPORATIONS

JERRY CAO

Since the 1980s the market has witnessed records not only for the amount of aggregate fundraising and leveraged buyout (LBO) investment activity, but also for the size of the individual buyout funds raised and individual LBO transactions undertaken. Private equity (PE) investments have a profound economic impact, spurring entrepreneurship and restructuring in many industries worldwide. At the same time, the rapid growth and globalization of the private equity industry has started to raise concerns among policymakers due to the increasing demand for regulations and disclosures of PE investment, especially in transactions involving public corporations.

One important and noticeable development in PE activity in the initial public offering (IPO) market is the reverse leveraged buyouts (RLBOs). RLBOs are the initial public offerings of firms that have previously been bought out by professional later-stage private equity investors. For instance, in 2005 approximately 53 percent of IPOs in the United States were backed by private equity investors, and in 2006, 42 percent were RLBOs. Following Jensen (1986), it is commonly recognized that private equity investors are purported to create value in restructuring LBOs and that sponsors often take LBOs public once the restructuring process is complete. In practice, some critics assert, buyout sponsors create no value in LBOs, but rather buy low and sell high by timing the market without enhancing operating efficiency. For example, in a recent C-suite survey of chief executives, chief

financial officers, and chief operating officers, the participants were primarily concerned about private equity's role in public corporations.[1] The concern was whether buyout sponsors are merely financial engineers who go in there, lever debt up, cut costs and pump the thing out (exit) some time later. To date, however, such public scrutiny surrounding the phenomenon of RLBOs often focuses on a few anecdotal cases, especially some troubled RLBOs such as Refco, backed by Thomas H. Lee Partners.[2]

Such controversy suggests that it is plausible to wonder whether buyout groups would find such a strategy productive. Buyout groups typically hold large equity stakes in firms prior to their IPOs, and they continue to retain substantial holdings subsequent to IPOs. Thus the post-IPO long-run performance of RLBOs has substantial wealth implications not only for public investors but also for the private equity investors. It is important to understand whether efficiency is achieved and reflected in the financial and operating performance of RLBOs since buyout sponsors depend on public investors to realize their exit and eventual gains.

Literature Review

These discussions call for a systematic examination of the corporate governance, stock performance, and operating efficiency of RLBOs. A summary of the related literature is provided in Table 5.1. Surprisingly such offerings have attracted little attention in the academic literature in recent years, despite the considerable attention devoted to the performance of venture capital–backed IPOs (Brav and Gompers, 1997; Gompers and Lerner, 1999; Hamao et al., 2000; Jain and Kini, 2000) or going-private transactions such as LBOs. Going-public transactions are critical for private equity. Kaplan (1991) examines 183 large leveraged buyouts executed between 1979 and 1986, showing that a significant fraction of firms undergoing LBOs went public once again.

Several papers in earlier literature examine RLBOs of the 1980s and early 1990s. With seventy-two RLBOs between 1983 and 1987, Muscarella and Vetsuypens (1990) find substantial increases in profitability and temporary increases in leverage when compared with the same firms prior to the LBO. Degeorge and Zeckhauser (1993) study sixty-two RLBOs between 1983 and 1987 (though much of the analysis is based on a smaller sample) and find that the accounting performance of these firms exceeds their peers' prior to going public and then deteriorates thereafter. Holthausen and Larcker (1996) examine ninety RLBOs between 1983 and 1988, and they argue that there is no evidence of poor performance when either accounting or stock market measures are employed. Recently Chou et al. (2006) studied earnings management around RLBOs and documented positive significant discretionary current accruals coincident with the public listing of LBOs.

Table 5.1 Summary of the RLBO Literature

Author	Sample	Main Findings
Muscarella and Vetsuypens (1990)	72 RLBO firms 1983–87	RLBO's superior accounting performance is due to improvement in governance
Degeorge and Zeckhauser (1993)	62 RLBO firms 1983–87	RLBO's accounting performance declines significantly post-IPO
Mian and Rosenfeld (1993)	85 RLBO firms 1983–88	Takeover activity of RLBOs explains positive abnormal return post-IPO
Holthausen and Larcker (1996)	90 RLBO firms 1983–88	RLBOs' accounting performance outperforms the benchmark, while stock return does not
Chou et al. (2006)	290 RLBO firms 1983–98	RLBOs show evidence of accounting manipulations such as earnings management
Cao and Lerner (2009)	509 RLBO firms 1980–2006	RLBOs outperform comparable benchmarks in their long-run stock return post-IPO
Cao (2011)	509 RLBO firms 1980–2006	Private equity sponsors time the IPO market for RLBO listings

Data and Sample Description

The absence of scrutiny of RLBOs since the 1980s is especially striking due to the changes in the market. The buyout market of the 1990s and 2000s is very different from that of the 1980s, both in terms of the amount of capital deployed and the degree of competitiveness of these transactions. It is natural to ask whether the earlier patterns still characterize this market.

This study uses a comprehensive collection of RLBOs between 1981 and 2003. The former cutoff date is chosen because the earlier literature suggests that there were essentially no earlier offerings, and the latter date was chosen to ensure three years of performance data for each offering. One main difficulty in collecting data for RLBOs is the identification and characterization of the RLBOs. The difficulty arises from two factors. The first is the secretive nature of buyout organizations. Unlike venture capital organizations, these buyout groups rarely disclose new investments on websites or in press releases. The second complication comes from the fact that the boundaries between venture capital and buyout investments are increasingly blurred. For example, private equity firms that typically make buyout investments have in the past decade also often made venture capital investments.

Two criteria are used to eliminate ambiguous transactions. The first is that the financing was undertaken by a buyout group. A list of buyout firms and

funds that primarily engage in buyout activities is complied from Thomson's VentureXpert and Standard & Poor's Capital IQ. Any IPOs that are not backed by at least one organization on this list was regarded as nonbuyout-backed and eliminated from the sample. The second is that the investment was characterized by the use of leverage. Databases of LBOs were searched to identify whether LBO transactions subsequently went public. RLBOs were determined by examining the entries in the databases indicating the outcomes of the transactions (which are frequently incomplete), as well as through searches of news stories and the SDC Corporate New Issues database. VentureXpert and SDC Mergers and Acquisitions databases, as well as Capital IQ, were employed to collect the data. These three sources together generate a final sample of 526 RLBOs from 1981 to 2003.

Table 5.2 presents the distribution of the sample by year. It highlights the increase in RLBO activity in the 1990s and the 2000s. It also highlights that the level of RLBO activity remains modest (at least until the final three years of the sample) in relation to that of LBOs and other IPOs. The number of RLBOs represents 13 percent of the LBOs conducted during this period, while RLBOs represent only 8 and 12 percent of IPOs in number and market value, respectively. The sample covers almost 150 private equity groups; the bulk of the offerings are by well-known groups such as Kohlberg, Kravis, Roberts, Forstmann Little, Citicorp Venture Capital, T. H. Lee, and Warburg Pincus.

IPO Characteristics of RLBO Companies

As Table 5.3 reports, the RLBOs are considerably larger than the other IPOs (excluding unit offerings, American Deposit Receipts (ADRs), closed-end funds, Real Estate Investment Trusts (REITs), and smaller offerings based on share prices, assets, and offering size). These offerings are less underpriced. Their first-day return is almost half that of the other offerings. They are also considerably more leveraged after the IPOs. (This ratio is the book value of debt to the sum of the book value of debt and the market value of equity.) Finally, at least partially reflecting the greater size of the offerings, the gross spread is lower for the RLBOs.[3]

Table 5.4 summarizes the characteristics and accounting performance of the RLBOs. The RLBO firm characteristics include equity market capitalization, the ratio of the market value of the firm's equity to its book value, assets, the ratio of operating income before depreciation (gross income less operating expenses, obtained from Compustat Data Item 21) to sales, the ratio of net income to assets (ROA), the ratio of interest expense to operating income, the ratio of capital expenditures to sales, the ratio of acquisitions to sales, the ratio of debt to assets, the ratio of long-term debt to assets, the price-earnings ratio, and the underwriter's

Table 5.2 Annual Distribution of RLBOs

Year	RLBOs	LBOs	Total IPOs	Ratio of RLBOs to LBOs (number)	Ratio of RLBOs to other IPOs (value)	Ratio of RLBOs to other IPOs (number)
1981	1	15	151	6.67%	2.45%	0.66%
1982	0	15	54	0.00	0.00	0.00
1983	5	46	392	10.87	0.73	1.28
1984	5	112	138	4.46	9.78	3.62
1985	8	153	166	5.23	16.17	4.82
1986	17	235	352	11.06	9.87	7.39
1987	27	212	260	13.21	2.15	10.77
1988	7	298	97	1.68	6.94	5.15
1989	6	299	100	2.01	13.87	6.00
1990	15	191	90	6.81	60.21	14.44
1991	39	181	223	21.55	40.47	17.49
1992	69	218	295	31.65	14.41	23.39
1993	50	180	469	26.67	4.15	10.23
1994	26	178	369	14.61	9.49	7.05
1995	25	209	397	11.48	10.96	6.05
1996	29	194	585	14.95	10.74	4.96
1997	39	202	438	19.31	15.96	8.90
1998	29	177	260	15.25	17.26	10.34
1999	30	183	411	16.39	12.28	7.30
2000	31	296	319	10.47	2.99	9.69
2001	27	167	68	15.57	11.24	38.24
2002	25	154	74	16.23	16.12	33.33
2003	16	131	70	12.21	18.76	22.54
Total	526	4,046	5,706	13.00%	14.08%	9.21%

Notes: The sample includes 526 RLBOs and other IPOs from 1981 to 2003. Columns 2 and 3 present the numbers of RLBOs and LBOs in each year, respectively. Column 4 shows the annual number of venture capital (VC)-backed IPOs. Column 5 shows the total number of IPOs, excluding American Depository Receipts, closed-end funds, unit offerings, and IPOs with an offering size smaller than $5 million, firm assets less than $5 million, or an offering price of under $5 per share. Columns 6 and 7 compute the ratio of the number of RLBOs to the number of LBOs and VC-backed IPOs; Columns 8 and 9, the ratio of RLBOs to other IPOs in value and in number. Information on the number of LBOs, VC-backed IPOs, and IPOs is obtained from Securities Data Company.

Table 5.3 Summary Statistics for RLBOs and Other IPOs

Year	RLBOs					Nonbuyout-backed IPOs				
	Gross proceeds (millions)	Under pricing (%)	Total debt/ capitalization after IPO	Assets before IPO (millions)	Gross spread (%)	Gross proceeds (millions)	Under pricing (%)	Total debt/ capitalization after IPO	Assets before IPO (millions)	Gross spread (%)
1981	28.90	0.74	49.21	174.28	7.18	12.67	7.75	23.32	22.21	7.92
1983	56.88	−4.13	33.17	98.14	6.55	21.70	10.98	33.95	72.99	7.59
1984	18.82	2.51	56.38	114.83	7.06	16.03	3.29	37.29	58.61	7.63
1985	25.23	2.67	53.98	97.64	6.95	20.57	6.91	39.13	472.31	7.65
1986	37.61	1.86	53.28	87.55	6.92	31.68	5.73	41.53	418.23	7.48
1987	61.00	1.54	61.73	267.06	6.69	37.66	4.97	37.90	520.51	7.34
1988	49.24	0.72	46.29	109.50	6.87	44.22	6.36	40.76	183.40	7.02
1989	59.22	2.53	59.28	411.31	6.71	42.85	8.43	31.45	145.42	7.15
1990	39.53	9.70	58.06	636.19	6.79	37.03	9.05	25.60	89.40	7.17
1991	76.88	10.63	45.79	459.30	6.70	40.15	15.63	24.76	142.57	7.13
1992	73.86	4.39	49.08	372.71	6.70	40.86	12.45	26.20	177.40	7.30

1993	61.43	7.85	47.16	465.98	6.84	44.59	13.16	27.38	460.79	7.24
1994	54.98	10.02	44.01	136.66	6.84	45.31	7.05	30.33	231.42	7.23
1995	138.24	5.05	32.05	1,152.06	6.44	49.54	20.87	22.81	128.14	7.16
1996	98.93	10.28	54.93	374.97	6.72	52.68	16.67	23.15	254.27	7.22
1997	97.83	12.30	39.65	509.65	6.79	53.40	12.71	22.54	669.51	7.19
1998	119.52	31.86	40.72	366.27	6.71	104.61	23.63	24.60	580.12	7.08
1999	215.51	44.42	51.18	506.46	6.63	99.71	76.51	13.77	1,078.99	6.96
2000	206.09	27.19	34.29	641.87	6.60	123.99	60.18	9.41	1,516.60	6.99
2001	168.39	15.58	38.58	853.02	6.71	387.37	13.59	20.34	9,762.43	6.63
2002	184.46	10.54	36.52	585.38	6.81	199.36	6.55	27.52	1,683.45	6.72
2003	235.66	10.37	35.73	752.62	6.62	113.48	13.83	25.39	630.65	6.89
Average	105.73	12.88	46.59	484.50	6.73	55.52	22.18	27.69	708.99	7.27

Notes: The sample consists of 526 RLBOs and 5,706 other IPOs between 1981 and 2003. Excluded are American Depository Receipts, closed-end funds, Real Estate Investment Trusts, unit offerings, and IPOs with an offering size smaller than $1.5 million, firm assets less than $5 million, or an offering price of under $5 per share. Mean characteristics for RLBOs and nonbuyout-backed IPOs are provided. Summary statistics include the gross proceeds, underpricing (first-day return), leverage ratio immediately after the IPOs (the ratio of the book value of all outstanding debt to the sum of equity market value and the book value of debt), firm assets immediately prior to the IPOs, and gross spread. When the data on underpricing are not available from SDC prior to 1986, I calculate the first-day return using CRSP price data. I also use Compustat to obtain data on assets that are unavailable from SDC (typically prior to 1985).

Table 5.4 Summary Statistics for RLBOs

	Mean	Median	Standard Deviation	Median, Industry-Adjusted by Other IPOs	Median, Industry-Adjusted by Mature Firms
Market value (millions of dollars)	543.08	237.95	971.06	148.73***	114.32***
Market-to-book ratio	3.09	2.59	16.19	−0.39	0.78***
Assets (millions of dollars)	621.62	226.13	1,438.15	85.12***	60.83***
Operating income/sales	8.02%	13.57%	107.06%	2.75%***	5.49%***
Net income/assets (ROA)	2.81%	3.49%	10.92%	0.25%	1.65%***
Interest expense/ operating income	32.27%	25.99%	55.04%	14.32%***	14.92%***
CAPEX/sales	12.67%	3.32%	61.59%	−1.89%***	4.06%*
Acquisitions/sales	13.38%	0%	59.41%	0%	0%
Total debt/assets	32.41%	29.52%	26.10%	16.19%***	9.36%***
Long-term debt/assets	30.68%	28.57%	25.08%	15.86%***	14.91%***
Price-earnings ratio	25.08	13.82	170.89	−1.41	2.15
Underwriter rank	8.65	9	0.95	1.53***	

Notes: The sample consists of 526 RLBOs between 1981 and 2003. The table reports summary statistics for the RLBO firms. The RLBO firm characteristics include the following: equity market capitalization, the ratio of the market value to the book value of the firm's equity, assets, the ratio of operating income before depreciation to sales, the ratio of net income to assets (ROA), the ratio of interest expense to operating income before depreciation, the ratio of capital expenditures (CAPEX) to sales, the ratio of acquisitions to sales, the ratio of debt to assets, the ratio of long-term debt to assets, the price-earnings ratio, and the underwriter's reputation (based on Carter et al., 1998, and related works, on a 0 to 9 scale, with 9 being the highest). All variables except for the underwriter rank are computed using data during or at the end of the fiscal year of the IPO, as reported by Compustat. The last two columns report the industry median-adjusted sample medians. I obtain the industry median for each year using both new IPO firms (those within three years of going public) and mature firms (all firms excluding new IPOs). Industries are defined using three-digit standard industrial classification classes. Test statistics are reported for Wilcoxon tests of whether the industry-adjusted medians differ from zero. *, **, and *** indicate significance at the 10%, 5%, and 1% confidence level, respectively.

reputation. For each measure (except the reputation measure), I obtained annual accounting and valuation data during or at the end of the fiscal year of the IPO. I then report the cross-sectional summary statistics. In the last two columns I also report the medians of these characteristics adjusted by the industry medians of new IPO companies (those within three years of an IPO) and of mature companies (at least three years after an IPO), which I compute for each three-digit industry using the standard industrial classification scheme. I use Wilcoxon tests to examine the differences in the medians from zero.

Table 5.5 summarizes the characteristics for both RLBOs and other IPOs. I include underpricing (first-day return), money left on the table (defined = *Max*{0, (close price–offer price)*shares offered})), secondary share offered as percentage of total shares offered, lock-up days, percentage of lock-up shares in total shares outstanding, gross proceeds of offering, underwriter's reputation

Table 5.5 IPO Underpricing and Other Characteristics of RLBOs

	RLBOs Unadjusted		Other IPOs		Adjusted by Year-Industry Matched Other IPOs (first 3 SIC digits)	
	Mean	Median	Mean	Median	Mean	Median
First-day return (%)	11.82	5.39	19.55	6.52	-5.20***	-5.61***
Money left on the table (Mil. $)	19.54	3.04	16.99	1.67	-0.71	-1.33*
Secondary shares percentage (%)	16.54	0	14.28	0	-0.48	-0.36
Lock-up period (days)	182.73	180	198.91	180	-5.59	0
Lock-up shares/ total shares outstanding (%)	26.21	0	19.61	0	-10.76***	0
Gross proceeds (Mil. $)	158.19	89.75	83.22	32.60	23.46***	12.04***
Underwriter reputation	8.60	9	7.59	8.10	0.71***	0.53***
Gross spread to price (%)	6.65	7.00	7.02	7.00	-0.22***	-0.05***
Gross spread (Mil. $)	10.02	6.28	4.94	2.50	1.97***	1.22***
Age (from founding to IPO)	31.13	21	9.82	10.37	8.27***	3.63***

Notes: The table uses 526 RLBOs and 5,706 other IPOs between 1981 and 2003. The IPO data are from the SDC new issues data set. IPOs with an offer size below $5 million, price below $5.00 per share, unit offers, closed-end funds, ADRs, and IPOs not listed on CRSP within six months of issuing are excluded. The IPO characteristics are adjusted by industry average (by mean and median of both first 2-SIC and first 3-SIC digits matched other IPOs). The characteristics include underpricing (first day/week close price divided by offer price minus 1), money left on the table (=*Max*{0, (close price–offer price)*shares offered}), secondary share percentage in total share offered, gross spread to price and gross spread, lock-up period and lock share divided by total share outstanding, gross proceeds of the offering, and underwriter's reputation (Carter-Manaster, 1990). Both year and industry-year adjusted IPO mean and median are reported. I report the statistics in Panel B for the following firm characteristics: pre-IPO asset, pre-IPO operating income/asset, market capitalization, volatility of stock return (standard deviation), excess monthly return, operating income/asset and market-to-book ratio. The significance test for mean and median uses t-test and Wilcoxon test, respectively. The *, **, and *** indicates the 1%, 5%, and 10% significance level, respectively.

rank, gross spread to price and total gross spread, as well as age of companies. I report both unadjusted and industry-year (first three Standard Industrial Classification [SIC] digits matched) adjusted mean and median.

RLBOs have significantly lower underpricing but more money left on the table than other IPOs. The first-day return is 11.82 percent compared to 19.55 percent for other IPOs, and money left on the table is $19.54 million versus $16.99 million. Compared to the industry average, RLBOs exhibit significantly lower first-day returns, but there is no difference in money left on the table between RLBOs and the industry average. Insiders sell about 16.54 percent of shares in total shares offered in RLBOs and 14.28 percent in other IPOs. RLBOs employ more reputable underwriters and have a much larger offering size than other IPOs. Partially due to their larger offering size, RLBOs pay lower gross spread, but they still pay more gross fees. In addition, RLBOs are more mature firms, and their ages are significantly greater than other IPOs or industry average.

The lower RLBO underpricing or more money left on the table can be driven by various factors, including maturity, size, operating performance, and underwriters. We therefore have to control all these factors to investigate the certification role played by buyout groups. Table 5.6 presents the average selection-bias-adjusted underpricing of RLBOs. I use a matched group of other IPOs with the propensity score methods. Propensity score matches each RLBO with its nearest neighbor in other IPOs using probit regressions in the first-stage selection model. The choice of first-stage instrumental variables is important for removing the selection bias. Given the difference in age, underwriter rank, and offering size observed in the previous tables, they are natural candidates. I also include industry, year, and an exchange dummy.[4] For robust checking, additional instruments such as pre-IPO asset and offer price are included. The bootstrap uses fifty replications with replacement. The robust t-statistics are calculated with bootstrapped standard errors and are reported in parentheses. I also split the sample into two subperiods: 1981–1995 and 1996–2003.[5]

Panel A of Table 5.6 reports the adjusted first-day return of RLBOs. RLBOs have lower underpricing than closed matched other IPOs based on a set of criteria. The first-day return difference is about –4 percent. The results vary only slightly depending on the instrument choices. The t-statistics are significant at the 10 percent level. The underpricing difference, however, is largely driven by observations after 1996. The adjusted first-day returns range from –7.50 to –5.90 percent in this period, partially reflecting the increasing underpricing of other IPOs. Panel B reports the selection-bias-adjusted money left on the table. Different from the previous findings, RLBOs have substantially less money left on the table. The adjusted difference of money left on the table ranges from –$12.89 million to –$17.09 million. Similarly the difference is more discernible in the subperiod after 1996, with the adjusted difference reaching –$21.24 million. The findings suggest that buyout sponsors play a valuable economical certification role in IPOs. Their presence helps lower substantially both first-day returns and money left on the table.

Table 5.6 RLBO Underpricing Adjusted by Other IPOs with Propensity Score Matching

Panel A: Propensity Score-Adjusted First-Day Return (%)		
Instrument:	Gross proceeds, IPO year, 2-SIC digits, NYSE, Age, Underwriter Rank	Gross proceeds, IPO year, 2-SIC digits, NYSE, Age Underwriter Rank, pre-IPO Asset, Offer Price
Full sample	−4.10 (1.91)	−4.40 (1.92)
1981–1995	−2.80 (1.81)	−3.21 (1.43)
1996–2006	−7.50 (2.77)	−5.90 (2.14)
Panel B: Propensity Score-Adjusted Money Left on the Table (Mil. $)		
Instrument:	IPO year, 2-SIC digits, NYSE, Age, Underwriter Rank	IPO year, 2-SIC digits, NYSE, Age, Underwriter Rank, pre-IPO Asset,
Full sample	−12.89 (3.11)	−17.09 (2.34)
1981–1995	−2.84 (2.02)	−4.75 (2.20)
1996–2006	−21.14 (3.55)	−19.36 (2.06)

Notes: The table presents the difference in first-day return and money left on the table between RLBOs and other IPOs matched with propensity score. I use 526 RLBOs and 5,706 other IPOs between 1981 and 2003. The IPO data are from the SDC new issues data set. IPOs with an offer size below $5 million, price below $5.00 per share, unit offers, closed-end funds, ADRs, and IPOs not listed on CRSP within six months of issuing are excluded. Each RLBO is matched with one non-RLBO IPO using propensity score. Panel A reports the propensity-matched first-day return difference; Panel B reports the propensity-matched money left on the table difference. I report both full-sample first-day return difference as well as subsample difference by dividing sample periods into two. Figures in parentheses are the t-statistics based on bootstrapped standard errors.

Monitoring of Private Equity in RLBO Companies

Private equity investors improve the operating efficiency of LBOs through an intensive monitoring and restructuring process. The structure of LBO partnerships provides strong incentives for buyout sponsors to maximize firm value. General partners of PE sponsors typically receive 20 percent of the profits (known as the "carry") when they successfully exit from LBO portfolio companies. Profits

are calculated based on the value delivered to limited partners either in cash from the sale of portfolio companies or in distributed shares of portfolio companies. The LBO sponsor is often not part of management and, therefore, is unlikely to derive private benefits of control. The agency effects modeled in Stulz (1988) and documented in Morck et al. (1988) are unlikely to be present. Buyout sponsors hold a large equity stake in RLBO companies post-IPO. Similarly the board structure of these companies will serve the interests of these "active" private equity investors.

Table 5.7 provides some specific information about the RLBOs, such as board composition and ownership. RLBO companies remain private on average for less than three and a half years after the LBOs. The buyout group's total capital managed before the year of RLBO averages $4.5 billion, but with a tremendous range.[6] Similarly buyout groups are on average fourteen years old at the time of the RLBO, but with a great deal of diversity. Both measures are used as a proxy for

Table 5.7 Summary Statistics for Buyout Firms

	Mean	Median	Standard Deviation	Minimum	Maximum
Years private after the leveraged buyout	3.46	2.83	2.66	0.08	17.03
Buyout group capital raised prior to RLBO (millions of dollars)	4,452.13	1,792.00	6,985.91	2.83	38,990.00
Buyout group age at time of RLBO	14.22	13	7.95	1	41
Buyout group ownership before IPO	58.89%	59.10%	26.24%	5%	100%
Buyout group ownership after IPO	40.48%	39.90%	19.85%	0%	85.13%
Director/management ownership before IPO	54.63%	69.11%	35.07%	6.94%	100%
Director/management ownership after IPO	38.00%	37.12%	26.8%	0%	89.8%
Board share of buyout group	44.00%	42.93%	20.60%	0%	100%
Chairman from buyout group	29.19%	0%	46.56%	0%	100%
CEO, president, and chairman from buyout group	14.09%	0%	24.81%	0%	100%

Notes: The sample consists of 526 RLBOs between 1981 and 2003. The table reports summary statistics for the buyout firms sponsoring the RLBOs and the RLBOs themselves. The variables include years between the buyout and the RLBO, the total capital raised by the buyout group prior to the RLBO date, the buyout group's age at the time of the offering (the years between buyout group's inception and the RLBO year), the share of the firm's equity held by the buyout group or groups and by the management and directors as a whole before and after the IPO, the share of the board filled by representatives of the buyout group at the time of the IPO, and dummy variables indicating whether the chairman of the firm was from (or was previously affiliated with) the buyout group and whether the chief executive officer, president, and chairman of the firm together were from (or were previously affiliated with) the buyout group.

buyout group reputation. The buyout group (or groups, if multiple investors are present) typically holds a majority ownership of 59 percent in the RLBO firms before the IPO. The ownership stake decreases to 40 percent after the offering, largely due to the effect of dilution from new share issues.[7] When we look at the shares held by managers and directors (which typically include most or all of the shares of the buyout investors), we find a similar pattern: their ownership decreases from 55 percent pre-IPO to 38 percent post-IPO. The buyout groups not only have large stakes in the RLBOs, but they also actively monitor the managers. About 44 percent of the boards of directors are from or are affiliated with buyout groups, and 29 percent of RLBO firms select their chairman from buyout groups. In 14 percent of the cases, the president, chief executive officer, and chairman (some of whom might hold multiple titles) are from or are affiliated with the buyout group.

Table 5.8 summarizes the ownership of buyout sponsors before and after their RLBO. Buyout sponsors on average continue holding significant equity stakes in the long term. Specifically their ownership decreases from about 32 to 24 percent from year IPO+1 to year IPO+3. Likewise sponsors retain a significant board share: the percentage of buyout-affiliated directors decreases from 32 percent in year IPO+1 to 25 percent in year IPO+3. The evidence here suggests that buyout sponsors do not pull out their capital soon after LBOs go public. They maintain a significant monitoring role in the long run.

Table 5.8 Ownership Structure of RLBOs and Sponsors' post-IPO Board Share

	Mean	Median	*SD*	Min	Max
Panel A: Buyout Group Ownership					
IPO year	39.77	39.65	20.10	1.70	84.08
IPO +1 year	32.36	30.82	20.94	0.00	79.80
IPO +2 year	26.91	23.40	21.57	0.00	77.10
IPO +3 year	23.95	21.05	21.81	0.00	76.20
Panel B: Board Share of Leading Buyout Group (%)					
IPO year	38.35	37.50	19.07	0.00	88.90
IPO +1 year	32.05	30.00	17.31	0.00	87.50
IPO +2 year	28.14	25.00	16.67	0.00	77.78
IPO +3 year	25.26	25.00	15.74	0.00	70.00

Notes: The table reports the ownership and board share of buyout sponsors in RLBO companies for 199 RLBOs between 1995 and 2003. The sample period is chosen since SEC filings of proxy statements became available after 1995. Panel A provides the summary statistics of buyout group ownership and Panel B the percentage share of the board members.

Operating Efficiency of RLBOs

Buyout sponsors are purported to create efficient organizations by restructuring LBOs. Once such a restructuring process is complete, LBOs go public and buyout sponsors start to exit. If such a restructuring process creates value, public traded companies backed by PE investors will show superior operating efficiency by outperforming their comparable public counterparties. Following IPOs, RLBOs should not experience deterioration of operating performance if restructuring is successful and complete.

Table 5.9 reports the benchmark-adjusted RLBO operating performance, with EBITDA/sales and ROA adjusted by the industry mean or median or by the industry and performance benchmark (matched EBITDA/sales or ROA at year IPO-1) in Panel A and Panel B, respectively.[8] Both measures of operating performance show that RLBOs outperform their comparable benchmarks. Consistent with Degeorge and Zeckhauser (1993), RLBOs show persistently superior operating performance in post-IPO years: EBITDA/sales or ROA outperforms the relative benchmarks by a range from 1 to 5 percent. Moreover neither measure of benchmark-adjusted operating performance exhibits any post-IPO deterioration. Such performance persistence suggests that buyout sponsors on average maintain superior RLBO operating performance. However, in the special subsample of RLBOs, quick flips, there is a strong pattern of performance deterioration: both EBITDA/sales and ROA jump just before the IPO but decrease drastically after it.

Restructuring, Quick Flip, and Performance of RLBO Companies

General scrutiny of RLBOs stems from the potential moral hazard as, based on insider knowledge, buyout sponsors push problematic LBO firms public and thereby transfer the expected bankruptcy risk and loss to public investors. In fact approximately 10 percent of the RLBO sample was delisted after going public, with most going bankrupt by filing Chapter 11 or Chapter 7. Hence this analysis links the probability of post-IPO delisting to LBO duration to identify whether buyout sponsors push immature LBOs public because of the greater susceptibility to bankruptcy risk. Sponsor decisions about the length of LBO restructuring are not homogeneous across RLBOs. Therefore any analysis of the effect of duration on performance must take into account this self-selection issue, especially for quick flips. To control for this problem, I investigate the likelihood of a quick flip and its effects on subsequent firm performance using Heckman's selection regressions, a two-step estimation procedure.

As Table 5.10 shows, the relative size of RLBO firms (firm asset relative to sponsor size, measured by total historical capital under management) is negatively associated with the likelihood of a quick flip, suggesting that this choice is more

Table 5.9 RLBO Firms' Operating Performance

Panel A: Industry Benchmark-Adjusted Operating Performance (based on first 3 SIC digits)				
	IPO-1	**IPO**	**IPO+1**	**IPO+2**
Full sample: ROA (net income/asset) (%) -mean	−3.48***	−0.60	1.52**	−0.43
-median	−2.58***	1.23	1.57*	0.98
EBITDA/sales (%) -mean	−1.89**	4.27***	3.42***	3.67***
-median	−3.42***	2.73**	2.98**	3.35***
Quick flips: ROA (net income/asset) (%) -mean	−2.69**	−1.07*	−0.38	−3.80*
-median	−1.76*	−0.53	−0.96	−2.54**
EBITDA/sales (%) -mean	−7.27***	2.39**	0.97	−0.34
-median	−5.58***	1.23	1.09	−1.82*
Panel B: Industry (first 2 SIC digits) and Performance (matching EBITDA/sales at year IPO-1) Benchmark-Adjusted Operating Performance				
	IPO-1	**IPO**	**IPO+1**	**IPO+2**
Full sample: ROA (net income/asset) (%) -mean	0.09	2.13***	4.19***	3.68***
-median	0.14	1.77**	2.23**	2.59***
EBITDA/sales (%) -mean	0.38	5.28***	4.87***	5.13***
-median	0.29	6.21***	5.85***	5.52***
Quick flips: ROA (net income/asset) (%) -mean	0.13	1.65	0.84	−2.31**
-median	0.11	0.92	−0.26	−1.97*
EBITDA/sales (%) -mean	0.25	2.58**	1.72*	0.91
-median	0.27	1.86	1.35	0.96

Notes: This table lists the key characteristics (mainly financial leverage) and operating/financial performance of RLBOs in the sample and reports cross-sectional sample means for the years IPO−1, IPO, IPO+1, and IPO+2. The performance measures include ROA, EBITDA/sales, sales growth, and EBITDA/sales. Panel A reports the industry benchmark-adjusted performance for RLBOs in the full sample and for quick flips in the subsample. Panel B reports RLBO performance adjusted by the industry and performance benchmark (at year IPO−1). The mean and median significance were tested using *t*-statistics and Wilcoxon *z*-statistics; *, **, and *** indicate the 10%, 5%, and 1% significance level, respectively.

likely for relatively smaller LBOs. The likelihood of a quick flip is also positively associated with the aggregate number of IPOs in the past three months and hotter IPO issuance periods. The coefficient of EBITDA/sales is positive and significant, possibly because sponsors are more likely to flip firms that are experiencing a performance peak (performance timing).

In the second-stage Heckman analysis, the quick flip dummy is significantly and negatively associated with long-run operating performance (average EBITDA/sales in the three years following the IPO). In contrast, the dummy is significantly

Table 5.10 Decision on Quick Flips and Its Effect on Performance

	First-Step Selection	Second-Step Regression		
	Quick Flips	Industry-Adjusted EBITDA/Sales	Delisting Dummy	36 Months Buy-and-Hold Return after IPO
Constant		0.041 (1.19)	0.137 (0.98)	−0.179 (0.49)
Quick flip dummy		−0.056* (1.87)	0.467* (1.72)	−0.072 (1.45)
Dummy for IPO debt reduction		0.023 (0.620)	0.192 (0.81)	0.033 (0.28)
Log (underwriter rank)		0.047 (1.07)	0.266 (0.20)	−0.011 (0.23)
IPO underpricing		−0.063*** (3.22)	0.185 (0.64)	−0.465* (1.69)
Buyout sponsor ownership before IPO		−0.021 (0.49)	−0.081 (0.17)	−0.735** (2.21)
Log (sales) at IPO year		−0.012 (0.35)	−0.032* (1.69)	−0.090* (1.78)
Firm assets before IPO/buyout sponsor size	−0.221* (1.61)			
Log (buyout sponsor capital)	−0.003 (0.97)			
EBITDA/sales prior to IPO	0.072* (1.73)			
Log (assets prior to IPO)	−0.004 (0.92)			
Log (total IPO numbers in previous 3 months)	0.162* (1.55)			
IPO market average underpricing in previous 3 months	0.518 (0.98)			
Lambda		−0.625*** (4.38)	−0.611 (0.38)	−0.352 (0.96)
R^2	0.06	0.18	0.23	0.08
Number of observations	272	272	272	272

Notes: This table presents the results of the regressions of long-run performance on quick flips using Heckman's selection approach. Estimations are based on the following:

First step: probit (quick flip) = $\alpha 0 + \alpha 1 \cdot$ control variables + ε.

Second step: performance = $\alpha 0 + \alpha 1$ quick flip + $\alpha 2$ control variables + $\alpha 3$ Lambda + ε.

Column 2 gives the first-step probit regression results for quick flips; Columns 3, 4, and 5 present the second-step OLS regression. The OLS regression in Column 3 uses EBITDA/sales; the probit regression in Column 4 uses a delisting dummy, and the OLS regression in Column 5 uses the buy-and-hold return. EBITDA/sales are calculated as the average of the years IPO, IPO+1, and IPO+2, measured at the end of the year and adjusted by industry median. The delisting dummy is set to 1 if a firm is delisted from the market within a three-year window post-IPO. The buy-and-hold return is measured three years following IPO and adjusted by the value-weighted market benchmark. Lambda is the inverse Mills ratio calculated from the first-step selection regression. The heteroskedastically robust *t*-statistics are reported in parentheses; *, **, and *** indicate the 10%, 5%, and 1% significance level, respectively.

and positively related to the likelihood of a firm being delisted within five years after the IPO. The evidence also reveals that, once the selection bias is controlled for, the long-run performance of quick flips is significantly worse than that of other RLBOs. This finding further supports the role of operating performance timing in the quick flips that tend to occur in hotter IPO periods. Moreover sponsors' opportunistic timing decisions for immature LBOs lead to value destruction; that is, quick flips exhibit poorer performance in the long run.

Financial Performance of RLBO Companies

Table 5.11 summarizes the cross-sectional mean and median performance measures of RLBOs in the five years following the IPOs. The measures are the raw (unadjusted) buy-and-hold returns, the buy-and-hold returns adjusted by the market (the value-weighted NYSE/Amex/Nasdaq index), the average monthly excess returns relative to the same value-weighted market return, and the alphas (excess returns) from the capital asset pricing (CAPM) model (also known as Jensen's alpha) and from a three-factor Fama and French (1992) model.[9]

The RLBOs deliver a raw buy-and-hold return of 19 percent over one year, 42 percent over three years, and 70 percent over five years after the IPOs. When this return is adjusted by value-weighted buy-and-hold market return, the mean remains positive but is only consistently statistically different from zero in the first year. (Holthausen and Larcker, 1996, did not find significantly positive first-year returns.) Average monthly returns and risk-adjusted returns from the CAPM and Fama and French (1992) models are positive and significant over all the years after the IPOs. The coefficients on the alpha terms suggest that the offerings outperform the market by between 0.3 and 0.5 percent per month in the five years after going public. The alpha results are consistent with the average monthly excess returns.

Table 5.12 looks at the performance of various subgroups of RLBOs. Much of the discussion in the business press about the performance of RLBOs has focused on offerings that went public soon after being bought out, as well as on public firms that were taken private and then returned to the public marketplace. This table breaks down the offerings by whether the status of the firm prior to the LBO was private or public, the months between the LBO and the RLBO, the use of proceeds, the experience of the buyout group, and the characteristics of the offering. I present the *p*-values from *t*-tests of the significance of the differences between the subgroups, as well as of whether each individual return differs from zero.

RLBOs of divisional LBOs (buyouts of divisions of larger companies) outperform other RLBOs. The public LBO firms (I identify only thirty-four RLBOs

Table 5.11 Event-Time Stock Performance

	12 months		24 months		36 months		48 months		60 months	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Buy-and-hold raw return	18.81 (0.00)	10.84 (0.00)	28.95 (0.00)	10.62 (0.00)	42.15 (0.00)	13.81 (0.00)	56.41 (0.00)	22.92 (0.00)	69.83 (0.00)	21.42 (0.00)
Buy-and-hold excess return relative to the VW market	8.56 (0.00)	0.35 (0.20)	6.51 (0.15)	−10.11 (0.26)	7.27 (0.29)	−15.48 (0.01)	6.58 (0.39)	−20.15 (0.00)	7.48 (0.43)	−24.14 (0.00)
Average monthly excess return relative to the VW market	0.56 (0.00)	0.40 (0.00)	0.42 (0.00)	0.52 (0.00)	0.40 (0.02)	0.44 (0.00)	0.29 (0.02)	0.42 (0.00)	0.30 (0.02)	0.56 (0.00)
Jensen's alpha	0.45	0.37	0.44	0.46	0.25	0.31	0.23	0.37	0.33	0.41
	(0.03)	(0.02)	(0.00)	(0.00)	(0.09)	(0.00)	(0.05)	(0.00)	(0.01)	(0.00)
{Beta}	{1.42}	{1.26}	{1.32}	{1.24}	{1.14}	{1.10}	{1.11}	{1.23}	{1.14}	{1.25}
FF alpha	0.59 (0.00)	0.42 (0.00)	0.37 (0.02)	0.42 (0.03)	0.26 (0.08)	0.43 (0.00)	0.27 (0.04)	0.38 (0.01)	0.34 (0.03)	0.35 (0.02)

Notes: The sample consists of 526 RLBOs between 1981 and 2003. The returns are computed ending 12, 24, 36, 48, and 60 months after the IPO date. (There are return data for 437 RLBOs.) Panel B reports the subsample results for 1981–94 and 1995–2003. The buy-and-hold excess returns and average excess monthly returns are both adjusted by the value-weighted (VW) NYSE/Amex/Nasdaq market index. Jensen alphas are the intercepts estimated by running firm-specific time-series regressions of monthly firm excess returns on the value-weighted NYSE/Amex/Nasdaq excess returns for 12, 24, 36, 48, and 60 months after the IPO. FF alphas are similar intercepts estimated using Fama and French (1992) factors as independent variables. If the sample firm delists, the raw returns, market-adjusted returns, Jensen's alphas, and FF alphas are set equal to zero after the delisting date. The two-tailed significance levels reported in parentheses below the means are based on one-sample *t*-tests, and the two-tailed significance levels reported below the medians are based on one-sample Wilcoxon tests. All stock return measures are expressed in percentages.

whose predecessors were stand-alone public firms before going private, reflecting the relative infrequency of such transactions until recently) perform better than their private counterparts when they go public again. The differences in Panels A and B, though economically large, are not statistically significant. Nor are the returns significantly different from zero.

In Panels C and D, I divide the sample according to the months between the LBO and the RLBO. If a firm was kept private longer than the median holding period of three years, it performs slightly better than the firms kept private

Table 5.12 Three-Year Market-Adjusted Performance for Subsamples

Panel A. Divisional LBOs versus Nondivisional LBOs

	Nondivisional LBOs (341)	Divisional LBOs (96)	*p*-value for difference
Buy-and-hold excess return relative to the VW market	6.04 (0.85)	19.29 (0.22)	0.21
Buy-and-hold excess return relative to the EW market	−8.75 (0.24)	17.47 (0.44)	0.11
Buy-and-hold excess return relative to the S&P 500	6.84 (0.28)	25.96 (0.09)	0.26

Panel B. Public LBOs (public stand-alone companies before LBO) versus Other LBOs

	Public LBOs (34)	Private LBOs (403)	*p*-value for difference
Buy-and-hold excess return relative to the VW market	20.26 (0.53)	4.36 (0.82)	0.60
Buy-and-hold excess return relative to the EW market	13.98 (0.92)	−4.15 (0.52)	0.86
Buy-and-hold excess return relative to the S&P 500	28.59 (0.38)	10.67 (0.42)	0.56

Panel C. Above versus Below Median LBO Holding Periods

	Above Median (208)	Below Median (229)	*p*-value for difference
Buy-and-hold excess return relative to the VW market	7.89 (0.52)	4.03 (0.68)	0.76
Buy-and-hold excess return relative to the EW market	1.56 (0.67)	−4.28 (0.66)	0.65
Buy-and-hold excess return relative to the S&P 500	13.98 (0.18)	10.87 (0.26)	0.81

Panel D. Longer Holding Periods versus Quick Flips

	Above 12 months (374)	Below 12 months (63)	*p*-value for difference
Buy-and-hold excess return relative to the VW market	8.84 (0.28)	−8.81 (0.40)	0.35
Buy-and-hold excess return relative to the EW market	0.18 (0.75)	−10.49 (0.33)	0.55
Buy-and-Hold excess return relative to the S&P 500	15.13 (0.05)	−3.45 (0.62)	0.31

(*continued*)

Table 5.12 (continued)

Panel E. Use of Proceeds Is Debt Reduction versus Other Uses

	Reduce debt (207)	Other use (230)	*p*-value for difference
Buy-and-hold excess return relative to the VW market	8.08 (0.49)	3.64 (0.74)	0.33
Buy-and-hold excess return relative to the EW market	8.63 (0.39)	–12.45 (0.02)	0.10
Buy-and-hold excess return relative to the S&P 500	13.94 (0.20)	10.73 (0.22)	0.80

Notes: The sample consists of 526 RLBOs between 1981 and 2003. For each IPO, the returns are calculated by compounding monthly returns for 36 months after the IPO, less the buy-and-hold return of the benchmark over the same period. If the IPO is delisted before the 36th month, I compound the return until the delisting date. Panel A reports the comparison between LBOs that were and were not of divisions of larger firms. Panel B reports the performance comparison between firms that were and were not stand-alone public entities prior to the LBO. Panels C and D divide the sample according to the holding period. Panel E compares RLBOs according to whether the use of proceeds was debt reduction. Each panel presents buy-and-hold returns, using as a benchmark the value-weighted (VW) NYSE/Amex/Nasdaq index, the equal-weighted (EW) index, and the Standard & Poor's (S&P) 500 index. The last column reports the *p*-value of the difference between two subsamples. The *p*-value from a *t*-test that the given value is different from zero is presented under each return. The number of observations in each comparison is also reported.

for a shorter time. Among the quick flips (the sixty-three RLBOs that went public within a year after the LBO), these RLBOs perform worse than those firms kept private for longer than one year by buyout groups. The differences are not statistically significant, though.

Panel E reports the subsample performance according to the use of the proceeds. For the firms that use the funds from RLBOs to reduce or retire debt, performance is much better. The differences are not statistically significant when using the value-weighted market benchmark or Standard & Poor's 500 index returns. For the equal-weighted benchmark, the differences are significant at the 10 percent level. The evidence weakly suggests that debt reduction creates value for RLBO firms.

Tests of long-run performance with buy-and-hold returns are subject to a variety of measurement problems, which are discussed by Barber and Lyon (1997), among others. One way to address this issue is to analyze the returns in calendar time. Instead of computing the subsequent returns for the RLBOs that went public in a given year, the returns are computed for each year for the portfolio of the RLBOs that went public in recent years. In Table 5.13 the portfolio is formed by including firms that went public within the past three years. Once again I equal- and value-weight the observations. The value weights are calculated with the previous month's market capitalization for each company.

As Table 5.13 reports, the equal-weighted portfolios have monthly excess returns relative to the value-weighted NYSE/Amex/Nasdaq index of –0.17 percent and relative to the equal-weighted NYSE/Amex/Nasdaq index of –0.28 percent,

Table 5.13 Calendar-Time Market-Adjusted Performance

	RLBOs		Nonbuyout-Backed IPOs	
Year	Relative to value-weighted market (%)	Relative to equal-weighted market (%)	Relative to value-weighted market (%)	Relative to equal-weighted market (%)
Panel A: Equal-Weighted Calendar-Time Portfolio				
1981	−0.40	0.28	−0.49	−0.86
1982	−8.31	−8.31	−0.43	−0.74
1983	−2.56	−3.60	−0.38	−1.43
1984	0.54	1.81	−2.39	−1.12
1985	−0.45	−0.08	0.12	0.49
1986	0.68	1.29	−1.34	−0.73
1987	0.33	1.13	−1.70	−0.90
1988	3.29	3.18	0.76	0.65
1989	−0.67	0.51	−0.87	0.31
1990	−2.35	−0.84	−1.33	0.18
1991	1.10	0.02	1.63	0.55
1992	1.10	−0.27	0.43	−0.95
1993	0.53	−0.57	−0.08	−1.18
1994	−0.08	0.29	−0.53	−0.15
1995	−1.21	−0.88	−0.45	−0.11
1996	0.67	0.86	−0.35	−0.16
1997	−0.46	0.21	−1.22	−0.55
1998	−0.52	1.35	−1.85	0.03
1999	−1.51	−2.09	1.69	1.12
2000	−0.71	−0.81	−4.00	−4.10
2001	3.16	0.27	2.78	−0.11
2002	−0.84	−1.86	−1.60	−2.61
2003	1.58	−0.69	3.38	1.11
2004	0.93	0.26	0.62	−0.06
2005	−0.01	0.10	−0.90	−0.79
2006	−0.09	−0.28	−0.34	−0.54
Mean	−0.17%	−0.28%	−0.36%	−0.49%**

(*continued*)

Table 5.13 (continued)

Year	RLBOs		Nonbuyout-Backed IPOs	
	Relative to value-weighted market (%)	Relative to equal-weighted market (%)	Relative to value-weighted market (%)	Relative to equal-weighted market (%)
B. Value-Weighted Calendar-Time portfolio				
1981	−0.40	0.28	0.34	−0.02
1982	−8.31	−8.31	0.90	0.59
1983	−1.21	−2.25	−0.38	−1.42
1984	1.00	2.27	−2.05	−0.78
1985	−0.45	−0.09	0.08	0.45
1986	0.44	1.05	−0.70	−0.09
1987	1.03	1.82	−0.42	0.37
1988	3.23	3.12	0.22	0.11
1989	−1.22	−0.04	−0.25	0.93
1990	−2.37	−0.86	−0.67	0.84
1991	0.90	−0.18	1.40	0.31
1992	0.99	−0.39	0.37	−1.01
1993	0.56	−0.54	−0.11	−1.21
1994	−0.03	0.34	−0.36	0.01
1995	−1.21	−0.88	0.26	0.60
1996	0.67	0.86	−0.53	−0.33
1997	−0.46	0.21	−0.59	0.08
1998	−0.52	1.35	1.37	3.25
1999	−1.51	−2.09	3.66	3.08
2000	−0.71	−0.81	−2.91	−3.00
2001	3.16	0.27	−1.46	−4.35
2002	−0.84	−1.86	−0.57	−1.59
2003	1.58	−0.69	0.53	−1.74
2004	0.93	0.26	0.97	0.30

2005	−0.01	0.10	0.32	0.44
2006	−0.09	−0.28	−0.10	−0.30
Mean	−0.17%	−0.36%	−0.03%	−0.19%

Notes: The sample consists of 526 RLBOs and 5,706 other IPOs between 1981 and 2003. Excluded are American Depository Receipts, closed-end funds, Real Estate Investment Trusts, unit offerings, and IPOs with an offering size smaller than $1.5 million, firm assets less than $5 million, or an offering price of under $5 per share. I form the monthly portfolios of RLBOs and other IPOs by including all issues that were undertaken in the three years previous to the month of the observation. I then calculate average monthly excess return for each calendar year, adjusting by the equal- and value-weighted NYSE/Amex/Nasdaq indexes. Both equal-weighted and value-weighted calendar-time portfolios are rebalanced each month, and the value weights are based on previous month's market value of the firms. The table also presents the results of *t*-tests whose means are significantly different from zero. *, **, and *** indicate significance at the 10%, 5%, and 1% confidence level, respectively.

neither statistically different from zero. Other IPOs underperform the value- and equal-weighted NYSE/Amex/Nasdaq index by −0.36 percent and −0.49 percent on average monthly. Value-weighted calendar-time portfolios of RLBOs and other IPOs both underperform the value- and equal-weighted indexes, while the excess returns relative to the market are not significantly different from zero. The market-adjusted RLBO return is positive in most years, with the negative returns clustering in the early 1980s and 1990s.

The contrast between the cross-sectional and calendar-time analyses can be traced to the very early years of the sample. The negative performance of RLBOs in calendar time is dominated by 1982. The single RLBO in 1981 (and the only one used to compute returns in 1982) had an average monthly loss of 8 percent in that year. When this extreme observation is excluded, RLBOs show slightly positive monthly return in calendar-time portfolios.

Summary and Conclusions

The analysis shows that RLBO companies experience no significant deterioration of operating performance or stock performance in post-IPO years, and compared to comparable benchmarks, RLBO companies exhibit superior operating and stock performance. These findings provide the empirical support that private equity sponsors improve the operating efficiency of LBOs after finishing restructuring them. Following successful restructuring of LBOs and taking them public, buyout sponsors continue to maintain an active monitoring role in RLBOs post-IPO and help deliver good long-run stock returns to public investors. Across RLBOs and market conditions, buyout sponsors have different incentives in restructuring LBOs. They spend less time in restructuring LBOs when such portfolio companies

have relative small economic size and when they face more favorable external conditions for new issuance. Bringing immature LBOs public, such as with quick flips, leads to poorer long-run operating performance and a greater probability of bankruptcy.

This research leaves a number of issues unresolved that call for more research. First, I have taken only an initial look at the buyout groups' involvement in their portfolio firms. Characterizing in more detail the extent of the buyout groups' involvement and understanding the consequences of those connections is challenging. But if these relations can be tracked more carefully (as has been done in research on venture capital), they should enhance understanding of the buyout process. Second, this study focuses exclusively on offerings that have gone public. The outcome of buyout investments more generally, and the types of firms selected for each form of exit, remain surprisingly poorly understood.

Notes

1. C-suite is a Canadian survey of executives at public companies on issues such as business and the economy.
2. Thomas H. Lee Partners bought a majority stake in Refco for more than $500 million in 2004 and took it public at more than double the price a year later. In one of more than a dozen lawsuits filed after the collapse of the firm soon after its IPO, the plaintiffs asserted that "there are substantial questions to be answered concerning the structure, cost and effects of the investment in Refco by Thomas H. Lee Partners in June of 2004, and Refco's IPO in August of 2005" (MarketMatch on November 5, 2005, reports).
3. The accounting data in this table are taken from SDC. In subsequent analyses, all accounting data employed are from Compustat.
4. The first-stage R^2 in the probit regression as selection models typically ranges from 25 to 30 percent, suggesting a reasonable selection of instruments.
5. IPO literature finds IPO underpricing increases significantly after the mid-1990s.
6. I replicated the analyses below using different measures of capital under management and found the results are robust to their use.
7. All ownership stakes are calculated on a common share equivalent basis; that is, convertible preferred shares are converted into common stock at the ratio then in effect. (Typically, at the time of the IPO, all classes of preferred stock are converted into common shares.)
8. EBITDA stands for earnings before interest, taxes, depreciation, and amortization.
9. In the Fama and French (1992) regression, we employ as independent variables (in addition to the alpha, or constant, term) RMRF, the value-weighted market return on all NYSE/Amex/Nasdaq firms (RM) minus the risk free rate (RF), that is, the one-month Treasury bill rate; SMB (small minus big), the difference each month between the return of small- and large-capitalization firms; and HML (high minus low), the difference each month between a portfolio of high book-to-market stocks and the return on a portfolio of low book-to-market stocks.

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CHAPTER 6

PRIVATE EQUITY GOVERNANCE AND FINANCING DECISIONS

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This paper analyzes the financing and governing behavior employed by private equity (PE) investors in order to manage investment risks and related agency problems. A special focus is devoted to how venture capitalists affect the governance of their portfolio companies within the Italian private equity market, which has shown a dramatic growth over the past ten years. For the purpose of this paper, the term "private equity" refers to the expansion financing of existing firms. This definition includes leveraged buyout (LBO) transactions and excludes start-up financing (defined as venture capital [VC]) (Vinten and Thomsen 2008). A leveraged buyout involves the acquisition of the equity capital of a target firm with the adoption of a large amount of debt relative to the asset value of the target (see, e.g., Kaplan and Strömberg 2009; Cumming and Zambelli 2010).[1]

Private equity and leveraged buyout transactions represent crucial governance mechanisms to restructure firms (Jensen 2007; Cumming 2007; Wright et al. 2009; Cumming et al. 2010). In recent years the massive growth experienced by the PE industry worldwide has intensified a debate over the need for greater regulation of PE and LBO transactions in order to better protect the interests of the target companies and its stakeholders (Yeoh 2007; Wright et al. 2009; Thomsen 2009; Zambelli 2010). Several recent empirical studies (e.g., Lerner and Schoar 2005; Da Rin et al. 2006; Cumming and Zambelli 2010; Cumming et al. 2006, 2010; Cumming and Walz 2010; Cumming 2010) and policymakers (such as the U.K. Financial Services Authority) have emphasized the importance of the legal environment for the

development of the PE industry, reinforcing the "law matter" view prompted by La Porta et al. (1997, 1998).[2] This view finds further support in recent empirical studies on the Italian buyout market. Cumming and Zambelli (2010) show that the Italian PE and buyout market have grown rapidly over the past six years, especially after the issuance of a new corporate governance law that has deemed leveraged buyouts legal and created a safer harbor for these types of transactions (for details on buyout regulation and legal environment, see Zambelli 2010). Despite the ongoing debate and regulatory concerns over private equity activity, a growing body of economic literature shows that PE investors (henceforth venture capitalists or VCsts) provide valuable managerial support to their investee companies by playing an active role in monitoring and governing them, as well as offering them crucial value-added advice and services (see, e.g., Sahlman 1990; Admati and Pfleiderer 1994; Lerner 1995; Gompers 1995; Sapienza et al. 1996; Hellmann and Puri 2002a, 2002b; Baker and Gompers 2003; Kaplan and Strömberg 2001, 2004; Cumming et al. 2004; Nielsen 2008; Metrick and Ayako 2010; Cumming 2010).[2] While the value-added role played by private equity investors has been extensively examined in the literature, there has been comparatively less empirical focus on how venture capitalists affect and shape the governance of their investee firms (Cumming et al. 2010; Bonini et al. 2011; Campbell and Frye 2009; Wright et al. 2009; Hartmann-Wendels et al. 2010). With reference to the Italian market, very few studies have analyzed the impact of PE on corporate governance, and the majority of those carried out are industry studies performed by the Italian Venture Capital Association (see, e.g., AIFI 2005; Gangi 2009).

The limited empirical evidence within the venture governance area is probably due to lack of public data on PE deal structure. This paper aims to fill this gap by exploring the financing and contracting behavior of private equity investors in Italy with the adoption of a new hand-collected database that refers to the actual venture capital contracts and deal terms. In particular, the paper describes the financial, contractual, and governance mechanisms that are employed by venture capitalists in Italy in order to manage the underlying investment risks involved in each transaction and to minimize asymmetric information consequences and agency costs. The underlying research questions are the following: Is the financing behavior of venture capitalists in Italy consistent with the predictions of the main theoretical models on venture capital financing, as well as with the U.S. empirical evidence? What type of governance and financial tools (equity, debt, convertible securities) is most frequently used by venture capitalists to finance entrepreneurial firms in Italy? Are convertible securities most commonly used by venture capitalists in Italy?

This paper is organized in six sections. The following two sections review the theoretical and empirical literature on venture capital contracting and financing behavior, and summarize the methodology and the sample characteristics. The fourth and fifth sections discuss the main results on governing and financing behavior in Italy. The last section provides concluding remarks.

Theoretical Background

Agency problems affect the interaction between the venture capitalist (the principal) and the entrepreneur (the agent). Venture capitalists have learned to adopt specific contractual provisions and governance strategies to alleviate these problems. This section reviews the main results that emerge from a detailed and comprehensive analysis of the economic literature. In particular, the aim of this section is twofold: to discuss the risk mitigation mechanisms employed by venture capitalists to manage risk and agency problems, and to review the theoretical and empirical literature on the governing and financing behavior of venture capitalists, especially with reference to controversial and puzzling evidence on the use of convertible securities in PE financing.[4] As a reference basis for this chapter, Figure 6.1 summarizes the various risk mitigation mechanisms highlighted by the theoretical literature and the most recent empirical evidence on PE contracting and governance.

Asymmetric Information and Agency Conflicts in VC Financing

PE investors target high-growth-potential firms with the hope of receiving an adequate return to compensate their underlying investment risk. VCsts derive their returns from the capital gain they obtain by divesting (or exiting) their portfolio companies (Cumming et al. 2005, 2006, 2010; Cumming 2008; Phalippou and Gottschalg 2009; Metrick and Ayako 2010).[5] By undertaking their investment activity, they face various types of risks with reference to market, opportunity, technology, people involved, legal environment, and exit opportunities (liquidity risk).[6] As emphasized by Sahlman (1990), Kaplan and Strömberg (2001, 2004), and Cumming (2005a, 2005b, 2006), the riskiness of PE investments is increased by the high asymmetric information and agency problems (i.e., effort problems, information problems, conflict of interests, free-riding, lock-up situations). These problems strongly affect the interaction between the venture capitalist and the entrepreneur.[7] As emphasized by Hartmann-Wendels et al. (2010), agency problems arise from both lack of agent ability and harmful actions or opportunistic behaviors employed by the agent against the interests of the principal.[8] In the absence of appropriate screening and control mechanisms, the presence of information asymmetry and agency problems may lead to:

1. Adverse selection (hidden information problem), which arises before the financing is made and refers to a situation of misrepresentation of the reality by the entrepreneur in order to induce the venture capitalist to provide the financing.

2. Moral hazard (hidden action problem), which arises after the financing is made and refers to the possibility that the entrepreneur will employ opportunistic

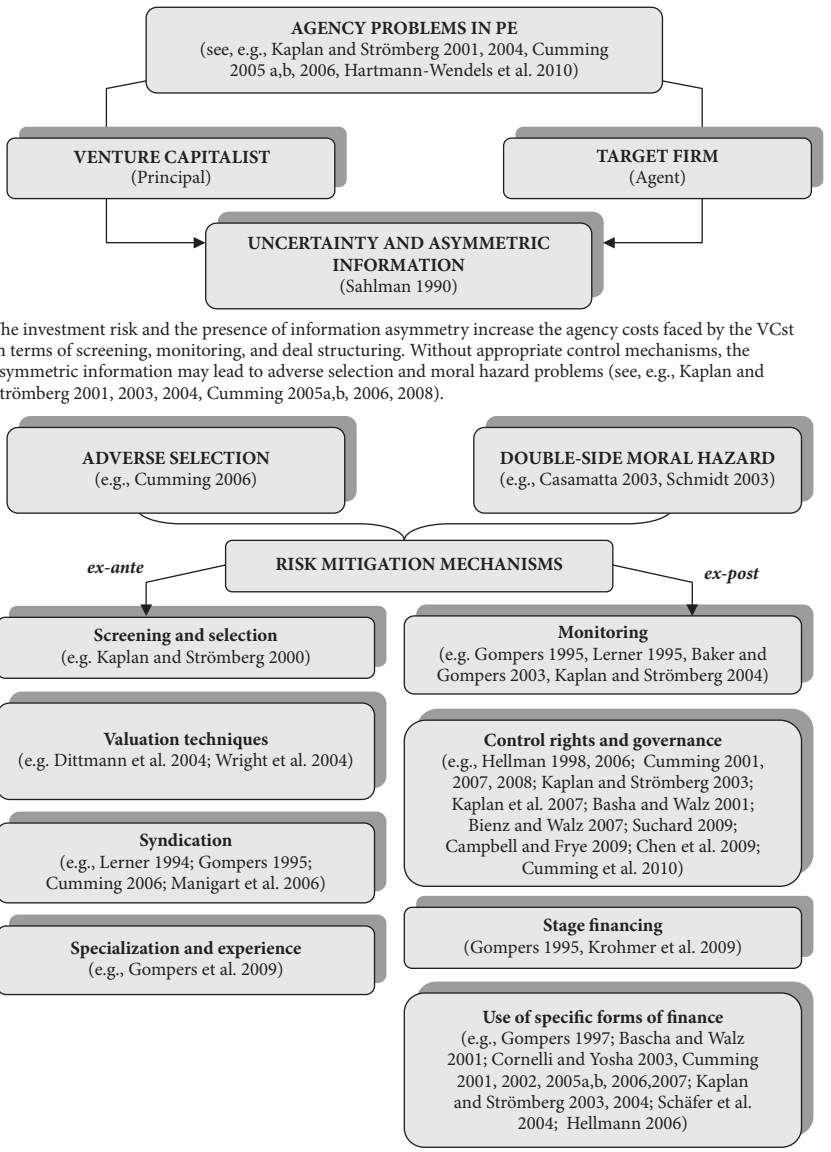

Figure 6.1 Risk mitigation mechanisms. This figure highlights the different risk mitigation mechanisms adopted in PE financing.

behaviors against the venture capitalist. The moral hazard problem is driven by a divergence of interests between the principal and the agent. The difficulty of combining the interests of the venture capitalist with those of the entrepreneur (conflict-alignment problem), as well as the difficulty of controlling and verifying the actions of the entrepreneur (goal-verification problem) may encourage detrimental opportunistic behavior. In a private equity context, the interaction between the venture capitalist and its portfolio firms is further complicated by the presence of a double-sided moral hazard problem, as shown by Schmidt (2003)

and Casamatta (2003). In fact the ultimate investment result depends not only on the quality of the entrepreneurial team, but also on the effort exercised by both the entrepreneur and the venture capitalist, who is supposed to provide valuable managerial support and services to portfolio firms. To mitigate these problems, venture capitalists need to devote a great amount of time and effort in setting appropriate mechanisms to incentivize the entrepreneur to act in the best interests of the company and the venture capitalist. The economic literature and empirical evidence (e.g., Gompers 1995; Kaplan and Strömberg 2004; Cumming 2005a, 2005b, 2006, 2007; Krohmer et al. 2009) show that PE investors have developed various specific strategies to mitigate the underlying risk and agency problems: screening, monitoring, syndication, stage financing, contracting and financing mechanisms (aimed at influencing and incentivizing the agent's behavior, as well as mitigating the double-sided moral hazard problem by separately allocating control rights and cash flow rights).[9] To better explain the various risk mitigation strategies adopted by the venture capitalist, in this paper the entire venture capital process is divided into three stages: prefinancing, financing, and postfinancing.

Prefinancing Stage: Ex-ante Risk Mitigation Mechanisms

Before providing the financing, VCsts devote significant attention and time to screening and evaluating the investment proposals in order to select the most attractive ones (Manigart et al. 2006). The international empirical evidence shows that VCsts tend to focus especially on the quality of the management team, the uniqueness of the opportunity, and the governance deal terms (see, e.g., Kaplan and Strömberg 2000, 2001; Lerner 2002; Millson and Ward 2005). Dittmann et al. (2004) empirically investigate the valuation techniques adopted by VCsts and find that the discounted cash flow model represents the most used. Wright et al. (2004) expand the previous literature on valuation by demonstrating that valuation techniques may vary across legal systems. With reference to the valuation phase, Hartmann-Wendels et al. (2010) find that investor expectations on the existence of agency problems may have a strong impact on firm valuation. According to their analysis, when investors expect to deal with high agency costs driven by inexperienced managers, the firm value drops dramatically (even by as much as 30 percent).

Another risk mitigation mechanism is represented by syndication. Lerner (1994) shows that the decision to invest is often conditional to the presence of syndicated investors. Cumming (2006) empirically demonstrates that syndication mitigates adverse selection problems and helps venture capitalists select high-quality projects. Manigart et al. (2006) find evidence that VCsts seek syndication not only to minimize adverse selection risks, but also to share the overall investment risk and to increase portfolio diversification. Additionally the specialization and previous industrial experience of venture capitalists play a crucial role in the

success of the investment, as demonstrated by Gompers et al. (2009). According to their empirical analysis, generalist investors are associated with poorer firm performances that are due to inefficient allocation of funds across industries and to inefficient selection of investment projects.[10]

Deal Structuring and Postfinancing: Ex-post Risk Mitigation Mechanisms

After the venture capitalist has identified the most attractive firms, the financing stage follows. In this stage financial contracting, control rights, and governance mechanisms play a crucial role in mitigating agency problems between VCsts and entrepreneurs, as well as providing the entrepreneur with the incentives to act in the best interests of the venture capitalist and the company (see, e.g., Sahlman 1988, 1990; Hellmann 1998; Kaplan and Strömberg 2001).[11]

As discussed in Kaplan and Strömberg (2003) and Cumming (2008), venture capitalists may adopt different types of control rights: control over production and marketing decisions, power of hiring or firing the CEO, power of having board control, and veto rights over some particular decisions (such as the issuance of securities, merger and acquisition possibilities, or large capital expenditure decisions). Kaplan and Strömberg (2002, 2003, 2004) provide evidence that PE investors separately allocate control and cash-flow rights between venture capitalists and entrepreneurs in order to mitigate agency problems. They also find that control rights are often made contingent on performance measures. Thanks to these contingencies, the venture capitalist gains more control rights or full control if the firm performs badly or if the targeted objectives are not fulfilled. If the firm performs well, the venture capitalist decreases control rights and gets more cash-flow rights instead. Bienz and Walz (2007) expand the previous work of Kaplan and Strömberg (2003, 2004) by empirically testing a variety of control, liquidation, and exit rights adopted by VCsts. Cumming (2008) analyzes the relationship between control rights and exit mechanisms. He finds that the presence of strong VC control rights (such as board control, veto rights, and the right to replace the CEO) is associated with a greater probability of exiting through an acquisition rather than through an IPO or write-off.

The monitoring and governance exercised by VCsts over their financed firms represents a closely related incentive and risk mitigation mechanism (see, e.g., Acharya et al. 2010; Sapienza et al. 1996, 2000). Venture capitalists are in fact active shareholders who provide managerial support and value-added services and play a strong governing position by sitting on the board of directors of their portfolio companies (Sahlman 1990; Lerner 1995; Gompers 1995; Hellmann and Puri 2002a, 2002b; Baker and Gompers 2003; Kaplan and Strömberg 2004; Cumming et al. 2004; Cumming 2006; Wright et al. 2008). Recent empirical evidence shows that venture capitalists contribute to improving the governance structure of the firms they finance

by influencing their board composition, creating more independent and involved boards, and providing stronger oversight (Backer and Gompers 2003; Chen et al. 2009; Suchard 2009; Campbell and Frye 2009; Katz 2009; Wright et al. 2009; Hochberg 2008; Cumming et al. 2010). Suchard (2009) shows an interesting positive association between venture governance and firm performance. The positive influence that VCsts exercise on the governance of their portfolio firms seems to lead to better firm performance.[12]

Another incentive mechanism often adopted by VCsts is represented by stage financing, which allows VCsts to monitor the progress of the project and the firm. By staging the capital injections in such a way that each financing tranche is contingent on reaching a particular goal, the VCst retains an option to abandon the project. The possibility of abandoning the venture may be a threat for the entrepreneur, who is then encouraged to maximize the effort and work in the best interests of the company (Gompers 1995). Stage financing may also have some "side effects" and sometimes fails as an incentive mechanism. For example, it may induce the entrepreneur to engage in opportunistic behavior (such as window dressing or reality misrepresentation) in order to receive the next round of financing (Cornelli and Yohsa 2003). Krohmer et al. (2009) show that the effects of stage financing depend on the development stage of the firm and that negative effects are more likely to prevail during the last stage.

In order to incentivize the entrepreneur and mitigate agency conflicts, PE investors may use specific forms of finance (debt, equity, or hybrid securities), depending on the institutional context and firm characteristics. The security choice represents a debated issue in the literature, as will be explained in the next section.

Financing Decisions: The Puzzling Empirical Evidence

With reference to the forms of finance adopted by venture capitalists, an ongoing puzzling debate exists, especially confronting theory with evidence.[13]

On the one hand, the use of debt is frequently considered a powerful incentive mechanism for managers to reduce agency costs and align management interests with those of shareholders (the "disciplining role of debt," as emphasized by Jensen and Meckling 1976; Jensen 1986, 2007; Holmstrom and Kaplan, 2001). Cumming (2006) expands the previous literature by empirically showing possible side effects from offering debt to entrepreneurial firms. According to his analysis, debt increases the probability of attracting high-risk firms ("nuts") who follow the "Heads I win—tails you lose" investment logic (see also Lerner 2002).

On the other hand, a growing body of economic literature on venture capital financial contracting includes theoretical models that recommend hybrid securities as a way of mitigating the underlying risk and agency problems (Aghion and Bolton 1992; Admati and Pfleiderer 1994; Berglöf 1994; Hellmann 1998, 2006;

Trester 1998; Bergemann and Hege 1998; Cestone 2000; Basha and Walz 2001; Cumming 2001; Cornelli and Yosha 2003; Casamatta 2003; Schmidt 2003; Cestone and White 2003; Repullo and Suarez 2004; Dessì 2005; Ozerturk 2008).[14] In order to reduce the agency costs and mitigate the asymmetric information between venture capitalists and their portfolio firms, the vast majority of these models identify an optimal contractual scheme based on the use of convertible securities. These theoretical models tend to converge toward a common prediction: convertible securities, especially if accompanied by the automatic conversion provision, appear to be the optimal contractual scheme to overcome agency conflicts between VCsts and entrepreneurs and to better manage adverse selection and moral hazard risks.[15]

According to the economic theory, convertible securities seem to be particularly attractive for various reasons. First, they combine elements of debt and equity and help to mitigate adverse selection and moral hazard problems, such as window-dressing problems (see the model by Cornelli and Yosha 2003).[16] Second, convertible securities, especially in the form of participating convertible preferred equity, ensure the venture capitalist greater control rights and greater downside risk-protection (because VCsts have a claim on the assets of the firm as long as they choose to not convert their securities). Third, convertible preferred stocks allow venture capitalists to transfer the risk to the entrepreneur in the worst-case scenario. Fourth, they provide the holders with the right to convert them into equity. Prior to conversion, the VCst holds a debt-like security with an option of conversion into equity, and until conversion these types of securities provide the VCst with preferred dividends and liquidation priority rights. If conversion occurs, the VCst loses dividend preferences and gains the ordinary dividends associated with common stocks. Hellmann (2006) highlights another important reason underlying the use of convertible securities, especially if the VCst holds convertible participating preferred equity. The key features of these types of securities are (a) they allocate different cash-flow rights depending on the type of exit (IPO or acquisition) that will occur; (b) they provide the VC with control power because the voting rights are applied on an "as-if-converted basis." Given that these securities are often accompanied by an automatic conversion provision at the time of IPO, if the exit occurs through an acquisition the VCst still holds preferred security. On the other hand, if the exit occurs via IPO VCsts automatically convert their securities into equity and will end up holding common stocks. Therefore cash-flow rights are higher in the case of exit through an acquisition than through an IPO. Moreover given the voting rights on an "as-if-converted basis," the conversion will not change the control rights held by VCsts. As Hellmann (2006) points out, the crucial characteristics of convertible preferred securities are not only the fact that they behave similarly to debt financing, but also that they are often accompanied by an automatic conversion provision in the case of an IPO. This provision usually does not apply in the case of acquisition. Hellmann's model predicts that the stronger the control rights held by the VCst, the more likely it is that the VCst will decide to exit through an acquisition rather than an IPO. The recent empirical analysis of Cumming (2008) provides support for this prediction. By analyzing 223 VC investments in Europe,

he finds that stronger VC rights increase the probability that the VCst exits with an acquisition. He also finds that the use of common equity is associated with weaker VC control rights and a higher probability of exiting through an IPO.

While the economic theory on PE contracting and financing behavior seems to converge toward the importance of using convertible securities, the empirical evidence is mixed and provides divergent puzzling results. In line with the implications and predictions highlighted by the majority of theoretical models on venture capital contracting (e.g., Cornelli and Yosha 2003; Schmidt 2003; Casamatta 2003; Hellmann 2006; Ozerturk 2008), the empirical evidence from the United States shows that convertible securities represent the most commonly used form of financing venture capital investments (Sahlman 1990; Gompers 1997). Kaplan and Strömberg (2001, 2003, 2004) and Kaplan et al. (2007) further reinforce this view. Kaplan and Strömberg (2003) empirically analyze the actual contracts related to 213 VC investments made in the United States and demonstrate that convertible preferred stocks represent the most used form of finance in the United States, in line with the related economic theory on venture capital contracting.[17] They also find that these types of securities are typically associated with automatic conversion into equity in the case of an IPO (in line with the results of the previous empirical studies by Gompers 1997; Sahlman 1990).

On the other hand, the empirical evidence from Canada (Cumming 2001, 2002, 2005a, 2005b, 2006), Europe (Cumming 2008; Basha and Walz 2002), and developing countries (Lerner and Schoar 2005) seems to provide different results. Outside the U.S. market, in fact, convertible securities are not the most commonly used form of finance. Instead a larger set of financial securities are adopted by venture capitalists. For example, Cumming (2002, 2005a, 2005b) explores the financial provisions used by venture capitalists in Canada. Contrary to empirical evidence in the United States, in Canada a wide variety of forms of finance are used. Among them common equity seems the most frequently used security: almost half of the examined financial contracts include common stocks.[18] Despite conventional wisdom, Cumming (2005b) shows that there is not a single unique optimal form of financing venture capital investments. He analyzes 3,083 venture capital investments in Canada and shows that convertible securities are not the most frequently used. Common equity is used in almost 37 percent of the cases, followed by debt (15 percent), convertible debt (12 percent), mixes of debt and common equity (11 percent), straight preferred equity (11 percent), different other combinations of preferred equity and debts (8 percent), and straight preferred equity (7 percent). Cumming (2006) further expands this contrasting and puzzling empirical evidence by showing that common equity is more likely to be chosen by low-return entrepreneurs (the "lemon principle"), while high-risk entrepreneurs ("nuts") are more likely to be attracted by debt contracts in order to fully enjoy the returns in the best-case scenario.

The contrasting empirical evidence on the forms of finance generates important questions: Why do venture capitalists outside the U.S. market use a variety of forms of finance other than convertible securities? Why are convertible preferred stocks not used outside the United States?

As shown in Cumming (2001, 2002, 2005a, 2005b, 2006, 2007, 2008), legal environment and security regulation represent important determinants for the venture capital contracting behavior.[19] Cumming (2005b) also points out that the choice of security in VC financing is context-contingent because it depends on the type of investee firm and on the type of transaction, as a response to different agency problems underlying the specific transaction.

However, according to the empirical analysis by Kaplan et al. (2007), it seems that more experienced venture capitalists tend to adopt a more sophisticated approach toward risk management. They analyze 145 investments realized by 70 VCsts in twenty-three countries and argue that more "sophisticated" VCsts use the U.S.-style contract approach (characterized by the dominance of convertible securities), regardless of the legal origins.[20] Although there may be differences in the use of financial securities across countries due to different legal origins, Kaplan et al. argue that more experienced and successful venture capitalists should use more efficient contracts by implementing the U.S.-style contractual scheme and allowing a higher downside protection. According to their analysis, inexperienced VCsts may not have completely understood the benefits offered by preferred stocks and may choose common stocks. They also find that VCsts who use U.S.-style contracts are less likely to fail, whereas 41 percent of VCsts who used common stocks have failed.

The empirical analysis by Lerner and Schoar (2005), however, leads to a different explanation for the wide use of convertible securities in the United States. They evaluate 210 PE investments in developing countries and find that differences in the legal and enforcement environment impose constraints on the venture capital contracting behavior. In low enforcement and civil law countries, venture capitalists tend to use common stocks and debt (instead of convertible securities) and tend to rely more on board control. Preferred convertible stocks are used mainly in common law countries with high enforcement.

In an attempt to shed some light on the puzzling VC financing behavior, Cumming (2007) analyzes 208 investments made in Canada by U.S.-based venture capitalists. Surprisingly he finds that U.S. venture capitalists investing in Canadian firms use a variety of forms of finance other than convertible securities. His analysis supports the conjecture that the choice of securities is context-dependent: it mainly depends on the characteristics of the investee firms, as well as the institutional and legal environment (in line with the previous study by Lerner and Schoar 2005).

Why would U.S.-based venture capitalists behave differently depending on the different context they invest in?

Gilson and Schizer (2003), provide an alternative answer, by focusing on U.S. tax regulation. According to their analysis, the use of convertible securities in the United States is justified by favorable tax treatment. The fiscal environment seems to be a crucial determinant of the security choice. When there are no tax benefits from the use of convertible securities (as seen in Canada), U.S. venture capitalists tend to use a heterogeneous mix of forms of finance.

Gompers and Lerner (1996) document that U.S. venture capitalists often face restrictions on the use of debt financing. Such covenants are less frequent in

Canada. This may be another reason motivating the dominance of convertible securities in U.S. venture capital contracts.

Furthermore Cumming (2007) highlights other possible explanations for the differences in the use of convertible securities across countries: exit opportunities and financial system characteristics. With reference to the latter, for example, he emphasizes that the banking system in Canada is highly concentrated, and there may be fewer debt finance opportunities available for entrepreneurs. This "open space" may incentivize U.S. VCsts who want to invest in Canada to follow a "one-stop shopping" financing approach, by offering Canadian firms a wide set of alternative financing possibilities. But we shall wait for further empirical studies on the VC security choice to test this prediction.[21]

The debate on the financing and contracting behavior in PE setting is far from over. To better understand the venture capital financing behavior and its determinants, more theoretical research and empirical studies on capital structure and contracting in countries other than the United States are necessary. This study takes a first step in this direction by focusing on the Italian market, where the financial system is bank-oriented and the corporate governance regulation has recently changed.[22] What are the forms of finance most commonly used by venture capitalists within the Italian market? So far, no empirical study on Italian venture capital contracts exists. Despite the large volume of theoretical contributions on venture capital contracting, relatively little attention has been paid to how venture capitalists actually work outside the United States. The vast majority of the literature on venture capital contracting behavior focuses on data sets from the United States and Canada, and there is no empirical evidence on the contracting and governance mechanisms applied by VCsts in Italy. This study contributes to filling this gap by adopting a new hand-collected database on the forms of finance and governance mechanisms used by local venture capitalists. The next section describes the sample characteristics and the underlying methodology.

Methodology and Sample Characteristics

This study is based on a novel and comprehensive dataset regarding risk mitigation mechanisms, as well as the PE financing and governing behavior of private equity investors in Italy.

One of the main problems faced by researchers in PE financing and venture governance is the limited availability of public data. PE investors are typically private firms and are not required to disclose detailed information on their venture capital investment cycle and governing strategies. As highlighted by recent empirical studies on PE financing (e.g., Bonini et al. 2011), the publicly available databases on PE

financing (i.e., Thomson Financial Venture Economics) tend to include only generic and standard information (i.e., amounts invested and divested, financing rounds, investors involved, enterprise value, equity stake, standard accounting and performance measure related to the target firm, etc). Moreover, with reference to the Italian PE market, international public data sets consider only a small percentage of PE deals. Other publicly available industry data sets (i.e., the Private Equity Monitor, collected by the Italian Venture Capital Association -AIFI- and the Università Cattaneo di Castellanza) are generic and do not allow the implementation of a deep analysis on the contractual provisions and the governance strategies employed by VCsts in Italy.[23] These local and international data sets fail to include detailed information about the deal structure, underlying evaluation process, contractual provisions, and governance structure underlying each transaction.

Our study contributes to filling this gap. It is based on a new and detailed data set on the risk mitigation mechanisms employed by VCsts over the entire VC cycle. It includes detailed information on deal structure, governing strategies, control rights, and exit rights. The next section describes in greater details the steps undertaken to collect the data.[24]

Data Collection Methodology

In the absence of detailed public information on PE deals, we assembled our data set by surveying international and Italian venture capitalists investing in Italy over the period 1999–2006. In order to maximize the response rate, we adopted a sequential mixed-mode survey approach by applying a different survey mode in a sequential way (see, e.g., De Leeuw 2005; Dillman et al. 2009). More specifically, we followed three phases:

1. Phase 1: Structured mail questionnaire.
2. Phase 2: Structured web questionnaire.
3. Phase 3: Structured personal in-office interview.

As summarized in Figure 6.2, in September 2005 we implemented a pilot study with the purpose of testing our questionnaire on a sample of academics, venture capitalists, and lawyers. We used their feedback to improve the questionnaire.

In December 2005 we started phase 1 of the survey by sending the ultimate version of the questionnaire to all of the 88 members of the Italian Venture Capital

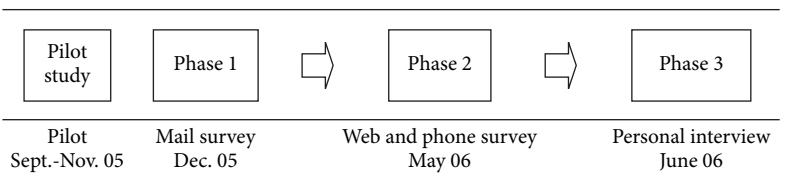

Figure 6.2 Sequential mixed mode survey. This figure shows the steps followed to build our data set.

Association (AIFI), which were included in the AIFI statistics reports published in October 2005.[25] We followed all the steps recommended by Dillman (1978) and Dillman et al. (2009). The survey included questions on the entire venture capital investment cycle and was addressed to partners of each private equity firm (local or international) actively involved in Italy. The target investee firms represented the unit of observation. The questionnaire was four pages long and required thirty to forty minutes to be completed.[26] By the end of this phase, only 5 investors replied (response rate: 9 percent), for a total of 19 investee firms.

In May 2006 we contacted all the nonrespondents to our mail survey and asked them to answer the same questionnaire via email or phone (phase 2). This phase allowed us to better identify the active investors in the PE sector. Eight additional VCsts replied (response rate: 14 percent), providing us with additional 33 investee firms. For confidentiality reasons, another 14 investors (24 percent) requested a personal interview in order to evaluate the objective of the survey and the underlying project in greater detail.

In June 2006 we started phase 3 (face-to-face interview). All of the 14 investors who requested a personal interview decided afterward to fill out the questionnaire (response rate: 24 percent). This phase provided us with an additional 110 investee firms.[27]

To improve the information quality of our database, we further expanded it by adding information collected from different public sources: AIFI statistics reports, Private Equity Monitor database (PEM), Thomson Financial Venture Economics database, Datastream by Thomson Corporation, AIDA database by Bureau van Dijk, fund websites, target-firm websites, Borsa Italiana S.p.A., and economic press releases. This data improvement allowed us to collect relevant information on control variables, such as market returns, industry market to book values, and fund characteristics (i.e., starting date, years of fund activity, portfolio composition and size, fund legal structure, capital under management, independency, and fund location).

Response Rate

Despite the difficulties of implementing the survey (especially due to the confidential information requested in the questionnaire), we obtained a high response rate (see Table 6.1).[28] Considering the number of investors actively involved within the Italian PE industry, we obtained a total response rate of 47 percent (27 of 57 investors). Considering the buyout sector alone (which represents the main focus of the PE industry), we obtained a response rate of 84 percent (21 of 25 investors). Both of these response rates compare favorably with previous financial surveys. For example:

- Brau and Fawcett (2006) obtained a response rate of 19 percent.
- Graham and Harvey (2001) obtained a response rate of 9 percent. The authors emphasize that their response rate is in line with previous financial surveys.

Table 6.1 Survey Response Rate, 1999–2006

	Number of AIFI Members (AIFI Yearbook)	Our Data Set	Response Rate (%)
Total AIFI members (in October 2005)	88	27	31
Total of actual PE and VC investors in AIFI dataset (after deleting new and double-counted investors)	76	27	36
Number of PE investors actively involved within the PE industry (according to the PEM SURVEY, PEM Report 2005, p. 11)	57	27	47
Number of PE investors actively involved within the buyout industry only (AIFI STATISTICS, 1st term 2005)	25	21	84

Note: This table shows the response rate related to the PE survey we carried out in Italy with reference to the 1999–2006 period.

Sample Characteristics

Our data set is more detailed than all currently existing public data sets on Italian PE deals and includes information on actual contractual provisions and control rights employed by PE investors in Italy. It also includes qualitative data on the relevance of different selection criteria used by VCsts. In particular the data set includes information on the entire private equity investment cycle carried out by the investor:

- Transaction characteristics (e.g., invested amount, location, industry).
- Screening criteria. VCsts were asked to rank the selection criteria underlying the choice of their portfolio firms. The ranking scale went from 1 (minimum relevance) to 5 (maximum relevance).
- Due diligence and valuation of portfolio firms.
- Syndication.
- Forms of finance adopted to accomplish the transaction.
- Control rights and related contingencies.
- Board representation and venture governance.
- Monitoring and information rights.
- Exit rights, return expectations, and actual divestments.

After eliminating unusable questionnaires (due to noncompleted answers for at least 60 percent of the questions) and adding information from other publicly available sources, as explained earlier, our database consists of 162 investee firms acquired by 27 PE investors active over the 1999–2006 period (see Figure 6.3). Among the 162 target firms, 103 (64 percent) were acquired

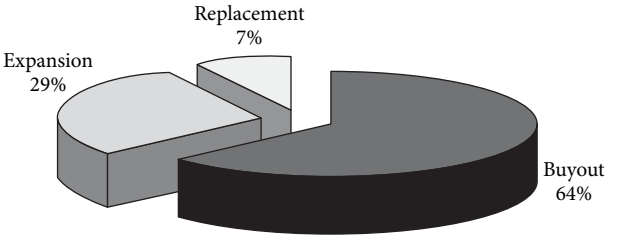

Figure 6.3 Type of transaction included in our database. This figure shows the private equity transactions included in the database (replacement deals, expansion transactions, and buyouts).

through a leveraged buyout transaction by approximately 85 percent of the buyout funds actively involved in Italy over the same period. The remaining 59 target firms (36 percent) were acquired through other types of PE transactions (i.e., replacement and expansion).

Among the 162 deals included in our database, international PE firms implemented 80 transactions, and local PE investors undertook the remaining 82. As described by Figure 6.4, the vast majority (88 percent) of PE deals included in our sample are concentrated in the north of Italy. Moreover, 47 percent of the target firms belong to the industrial sector and basic material industry (Figure 6.5).

Table 6.2 shows the typical profile of the transactions included in our database. On average, the transactions carried out in Italy over the 1999–2006 period are structured in such a way as to involve two syndicated investors, PE majority ownership stake, and one financing round. They also involve a trade sale divestment, which occurs after an average holding period of two and a half years.

Sample Representativeness

The database comprises 162 PE transactions implemented by 27 PE firms between 1999 and 2006 (second quarter). In order to evaluate the representativeness

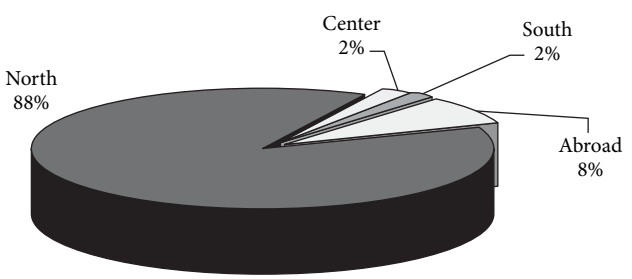

Figure 6.4 Geographical distribution of the target firms. This figure shows the geographical distribution of the PE portfolio companies.

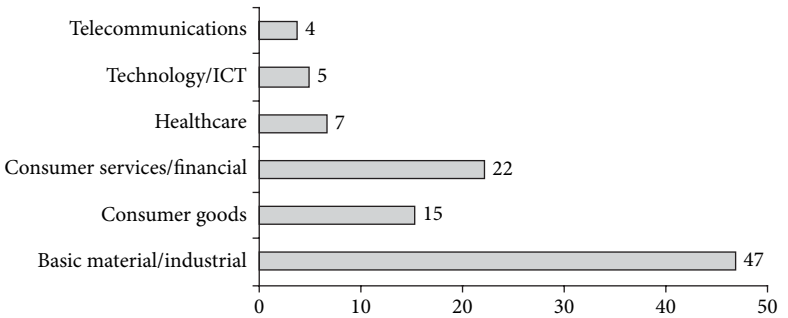

Figure 6.5 Industry distribution of the target firms. This figure shows the industry distribution of the PE portfolio companies (values are expressed in term of %).

of our database, in Table 6.3 we compare our sample with the Private Equity Monitor (PEM) database, which includes PE deals carried out in Italy, with some information on deal type and value of target firms. In Panel A of Table 6.3 we compare the yearly distribution of our entire sample with that associated with the PEM database. Apart from a few exceptions (2000–2004), the comparison tests indicate no statistically significant differences between our sample and the PEM data set. In Panel B we compare the sector distribution of the buyout transactions included in our sample with the sector distribution of the buyouts included in the PEM sample. The two distributions do not show significant differences. In Panel C we compare the geographical distribution of the PEM data set with that related to our database. No relevant differences are shown in terms of area distribution.[29] As shown in Table 6.3, our sample is comparable to the PEM database in terms of geographical, sector, and yearly distribution.

Table 6.2 Typical Transaction Profile

		Our Database
Average N of syndicated investors	→	2
Average N of financing rounds completed by the fund	→	1
Average enterprise value	→	31 M. euro
Average multiple used to estimate the enterprise value	→	(EV/EBITDA) = 5.4
Average size of the investment	→	7 M. euro
Average equity stake held by the lead investor	→	37%
Average equity stake held by all private equity investors	→	58%
Typical exit route	→	Trade sale
Average holding period	→	2 and a half years

Note: This table highlights the typical profile of the transactions included in our database.

Investor Characteristics

Among the 27 PE investors who filled out the questionnaire, 21 declared they were actively involved within the buyout sectors. Moreover 12 PE investors (44 percent) are represented by Italian independent closed-end funds; 4 VCsts (15 percent) are

Table 6.3 Comparison Tests between the PEM Database and Our Sample

Panel A	PEM Survey		Our Survey		
Yearly distribution	Total number of transactions included in PEM database (1999–2005)	Proportion of buyouts included in PEM database (1999–2005)	Total number of transactions included in our sample (1999–2006 2nd quarter)	Proportion of buyouts included in our data set (1999–2006 2nd quarter)	Comparison of proportion tests
1999	56	0.45	12	0.58	–0.84
2000	69	0.33	15	0.60	–1.95*
2001	60	0.20	8	0.38	–1.12
2002	61	0.56	25	0.64	–0.68
2003	71	0.56	24	0.46	0.86
2004	55	0.71	29	0.90	–1.94*
2005	89	0.70	40	0.65	0.57
2006	NA	NA	9	0.56	NA
Panel B	**PEM Survey**			**Our Survey**	
Sector distribution	Number of buyouts included in PEM database (1999–2003)	Proportion of buyouts included in PEM database (1999–2003)	Total number of buyouts included in our sample (1999–2006, 2nd quarter)	Proportion of buyouts included in our data set	Comparison of proportion tests
Industrial/basic material	134	0.57	103	0.56	0.15
Consumer goods	134	0.19	103	0.16	0.60
Services/financial services	134	0.15	103	0.17	–0.42
Telecommunication/ utilities	134	0.04	103	0.03	0.41
Technology/ICT	134	0.03	103	0.03	0.00
Health care	134	0.01	103	0.05	–1.87*

(*continued*)

Table 6.3 (Continued)

Panel C	PEM Survey		Our Survey		
Geographical distribution	**Total number of transactions included in PEM database (1999–2003)**	**Proportion of all PE transactions included in PEM database (1999–2003)**	**Total number of transactions included in our sample (1999–2006 2nd quarter) (excluding 5 deals carried out abroad)**	**Proportion of all PE transactions included in our data set**	**Comparison of proportion tests**
North	317	0.81	157	0.75	1.51
Center	317	0.15	157	0.19	–1.11
South	317	0.04	157	0.06	–0.97

Notes: This table compares our sample with the PEM database (which includes PE deals carried out in Italy, with some information on deal type and value of target firms). Panel A compares the yearly distribution of our entire sample with the one associated with the PEM database. Panel B compares the sector distribution of the buyout transactions included in our sample with the sector distribution of the buyouts included in the PEM sample. Panel C compares the geographical distribution of the PEM data set with the one related to our database. *, **, *** statistically significant at the 10%, 5%, and 1% levels, respectively.

Italian bank subsidiaries; 8 investors (30 percent) are international independent limited partners; and 3 funds (11 percent) are subsidiaries of international banks. Table 6.4 shows the distribution of the type of transactions (buyout, expansion, and replacement) by type of investors (independent and bank subsidiaries). As shown in Table 6.4, independent investors tend to focus more on the buyout sector

Table 6.4 Types of Transactions by Types of Investors

		Buyout	Expansion	Replacement	Total
Independent	N	63	9	9	81
	%	77.8	11.1	11.1	100
Bank subsidiaries	N	27	38	3	68
	%	39.7	55.9	4.4	100
Total	N	90	47	12	149
	%	60.4	31.5	8.1	100

Note: This table shows the distribution of the transactions by type of investors (independent and bank subsidiaries).

Table 6.5 Years of Experience of PE Funds Included in the Sample (as of June 2006)

Years of PE activity		%
6	→	9%
7–12	→	4%
13–18	→	53%
>18	→	34%

Note: This table shows the distribution of PE investors according to the years of PE activity.

(78 percent), while bank subsidiaries tend to be more focused on other types of private equity deals (expansion and replacement deals) characterized by a lower level of risk.

Table 6.5 shows the years of experience of PE investors as of June 2006. Experienced investors (with more than six years of PE activity) implemented all the transactions.

Ex-ante Risk Mitigation Mechanisms

Screening and Due Diligence

As highlighted by Cumming (2006), screening and due diligence are important mechanisms to minimize adverse selection risk.

In our survey we asked PE investors to indicate the time spent on due diligence and the related selection criteria. In line with the results highlighted by the international empirical evidence (De Clercq et al. 2006; Fried and Hisrich 1994), in Italy PE investors spend seven to eight weeks to complete the due diligence. Figure 6.6 shows the frequencies (in terms of percentages) related to different due diligence timing. The number of weeks spent on completing the due diligence is represented in the horizontal axis, while the related frequencies are in the vertical axis. For the majority (51 percent) of the examined transactions investors spend from five to eight weeks to complete due diligence; in 18 percent of the cases investors spend more than eight weeks; in the remaining 26 percent of transactions due diligence was completed in less than five weeks.

With reference to the type of due diligence implemented by each PE fund (internal or external due diligence), our database shows that in 37 percent of the

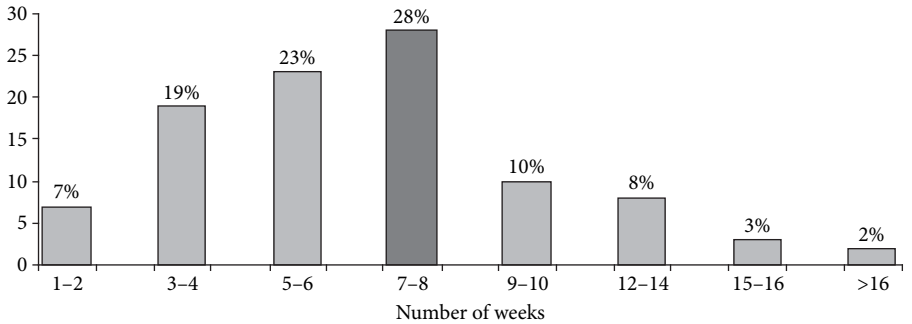

Figure 6.6 Due diligence timing. This figure shows the distribution of due diligence timing (expressed in number of weeks). The vertical axis shows the related frequencies. For example, in 28% of cases, PE investors spent 7–8 weeks to complete the due diligence.

transactions VC funds complete the due diligence only internally. In the remaining cases, the due diligence is implemented by both the VC funds involved in the transaction and external consultancy firms.

We also asked each investor to indicate the screening criteria used for selecting their portfolio firms. We asked them to rank the relevance of each criterion by using a Likert-type scale from 1 (minimum relevance) to 5 (maximum relevance). In line with Sahlman (1999), we grouped different criteria into the following categories:

- *Firm*: criteria related to the target firm's characteristics (e.g., *business history*, firm age, development stage).
- *People*: criteria related to the quality, experience, and track record of the *management* team.
- *Opportunity*: criteria related to the uniqueness and technology of the project or product, the business plan, and cash flow potential.
- *Context*: criteria related to the *market* context (industry, *competitors*, suppliers, entry barriers).
- *Investment Risks and Reward*: criteria related to the investment's characteristics and the related risks and returns (e.g., invested amount, VC ownership stake, time to reach the break-even point, strategic fit with other portfolio firms, expected internal rate of return (IRR), risk analysis).

Our data show that the most important selection and investment criteria for investors in Italy are the following:

1. Management (average rank = 4).
2. Market (average rank = 3.8).
3. Business plan growth potential (average rank = 3.7).
4. Firm characteristics (average rank = 3.6).
5. Investment characteristics (average rank 2.6).

Table 6.6 Risk Analysis Employed by PE Investors by Type of Transactions

		Expansion	Buyout	Total
No risk analysis	N	28	17	45
	%	68.3	16.5	31.3
Risk analysis	N	13	86	99
	%	31.7	83.5	68.8
Total	N	41	103	144
	Total	100%	100%	100%

Notes: This table shows the type of risk analysis employed by PE investors in Italy by the type of transaction (expansion and buyout deals).

Selection criteria based on the management team have the highest relevance. This is consistent with previous international studies (see, e.g., Lerner 2002).

By splitting the sample by type of transaction (buyout or expansion), we found no major differences in the selection process behavior. However, VCsts seem more concerned with risk analysis, when they invest in buyouts, than expansion transactions (Table 6.6).

We also asked PE investors to indicate the valuation models for each target firm. Our data show that the most used valuation model is the comparable method. In 50 percent of the transactions the comparable method represents the only valuation model employed by VCsts in Italy. In 35 percent of cases, PE equity investors applied the comparable method in combination with the discounted cash flow (DCF) model. In the remaining 15 percent of cases, VCsts also employ more advanced DCF adjustments (such as venture capital method and adjusted present value [APV] analysis) in combination with the DCF and comparable models. However, the real option method is never applied (Figure 6.7).[30] More advanced DCF methods are used to value leveraged buyouts only (Table 6.7).

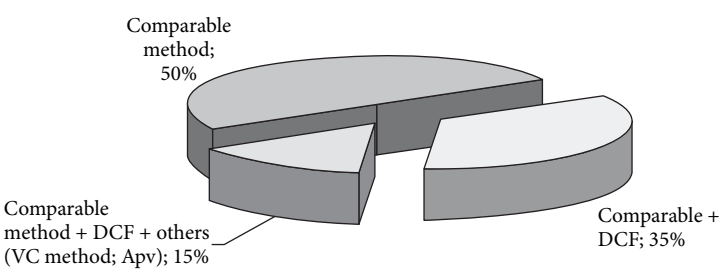

Figure 6.7 Valuation models. This figure shows the valuation models employed by VCsts in Italy.

Table 6.7 Valuation Models by Type of Transactions

Types of valuation models adopted by VCsts		Expansion	Buyout	Total
Multiples only	N	26	46	72
	%	63.4	44.7	50.0
Multiples + DCF	N	15	35	50
	%	36.6	34.0	34.7
Multiples + DCF + Advanced DC models (VC method; APV)	N		22	22
	%		21.4	15.3
Total	N	41	103	144
		100%	100%	100%

Note: This table shows the valuation models employed by VCsts in Italy according to the type of transaction (buyout or expansion deal).

We also asked PE investors to indicate the type of multiple used in their firm valuation. The most frequently used multiples are the EV/EBITDA ratio (applied for 56 percent of cases) and the EV/EBIT ratio (used for 23 percent of transactions). The EV/SALE multiple is adopted in only 5 percent of cases (Figure 6.8).

Syndication

Syndication is another risk mitigation mechanism, generally adopted by PE in Italy. As highlighted in Figure 6.9, PE transactions are structured in such a way as to include one or two syndicated investors in order to reduce the overall investment risk, as well as to reduce the adverse selection risk.

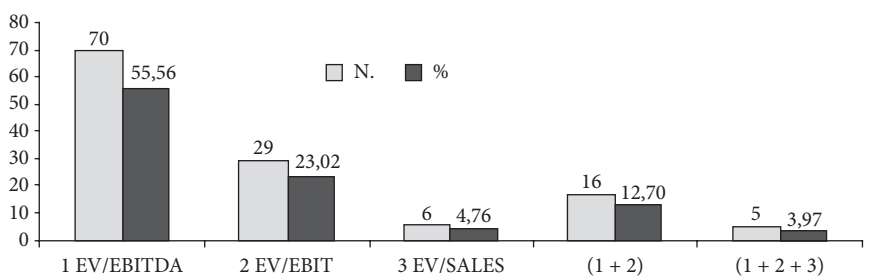

Figure 6.8 Multiples used. This figure shows the frequencies associated with the type of multiples employed by venture capitalists in Italy.

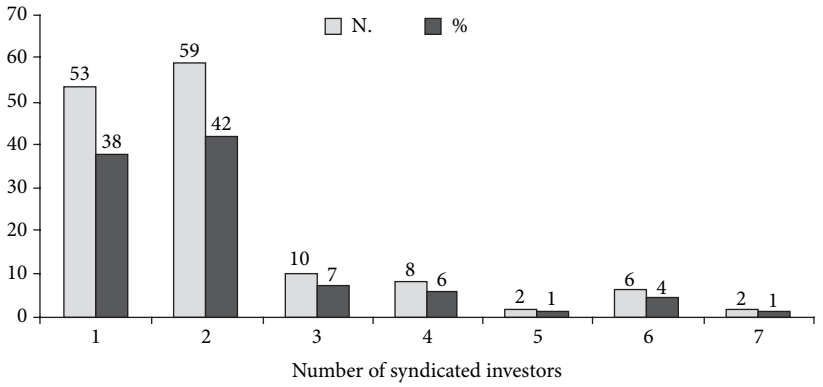

Figure 6.9 Average number of syndicated investors for each transaction. This figure shows the distribution associated with the number of syndicated investors. The vertical axis represents the related frequencies. For example, in 59 PE transactions (42%) two syndicated investors were involved.

Ex-post Risk Mitigation Mechanisms: Deal Structure, Financing, and Governance

Deal Structure and Financing Mechanisms

Kaplan and Strömberg (2003) show that the majority of venture capital and private equity transactions implemented in the United States are structured as convertible preferred stock with dividend and liquidation preferences. However, the empirical evidence from Canada (e.g., Cumming 2008) shows that a heterogeneous set of financial instruments is generally used by venture capitalists. According to his analysis, convertible preferred equity is used mostly for seed and early-stage financing and for Internet investments. Common stocks are most generally used for expansion financing.

In Italy the use of convertible securities is not as common as it is in the United States. Contrary to the U.S. evidence from Kaplan and Strömberg (2003), the most commonly used security in Italy is common stock, followed by debt and subordinated debt (Table 6.8). In particular, in 97 percent of transactions VCsts use common stocks, while convertible securities are used in only 10 percent of cases, and always in combination with common stocks. Convertible securities are always accompanied by an automatic conversion provision into common stocks at certain events (e.g., in the case of an IPO). The automatic conversion provision is in line with the international theoretical and empirical literature (see, e.g., Hellman 2006; Repullo-Suarez 2004; Cornelli-Yosha 2003; Schmidt 2003; Kaplan and Strömberg 2003). The use of debt, on the other hand, is mainly associated with

Table 6.8 Financial Securities

Financial securities adopted in Italy by VCsts	%
Common stocks	97
Debt	57
Subordinated debt	7
Convertible securities (convertible bonds, convertible preferred stocks)	10
Other equity linked securities (with no voting rights)	1

Note: This table shows the forms of finance employed by VCsts in Italy and the related frequencies.

buyout transactions. In line with Cumming (2008), common stocks are adopted mainly for expansion financing.

We further checked whether different types of funds (international or local) behave differently when selecting the types of securities. We did not find any significant difference in the security choice behavior between international and local PE funds. International funds investing in Italy prefer to adopt common stocks and do not often use convertible securities.

Ownership Rights

We asked PE investors to specify the ownership stake acquired in their portfolio companies. Our data show that PE investors behave differently depending on the type of transactions (buyout or expansion). Table 6.9 shows the frequencies of ownership rights held by investors according to the type of deal. For the vast majority of the expansion deals included in our sample (83 percent), VCsts acquire a minority equity stake (less than 30 percent). In contrast, a majority equity stake (greater than

Table 6.9 Equity Stake Acquired by All PE Investors Involved in Each Transaction

EQUITY STAKE acquired by all VCsts involved in each transaction	Expansion (%)	Buyout (%)	Total (%)
Minority equity stake in the target	83	23	42.9
Controlling equity stake in the target	17	77	57.1
Total	100	100	100

Note: This table shows the frequencies associated with the equity stake (minority or majority) acquired by VCsts in Italy according to the type of transaction (buyout or expansion deal).

50 percent of the target's equity) is typically acquired in the case of buyouts. More specifically, in 77 percent of buyout deals the VCsts hold a controlling equity stake.

Board Representation

Typically venture capitalists expect to partake in management decisions by having a strong position on the board of their portfolio companies. VCsts often negotiate with the entrepreneur the right to take full control of the board of directors if the company fails to reach certain milestones or certain business plan goals, as well as if the entrepreneur and management team violate certain contractual provisions. Furthermore VCsts expect to increase their representation rights in the case of poor firm performance or in the case of a weak or inexperienced management team (in line with Hellman 1998).

In our database the vast majority of VCsts (91 percent) sit on the board of directors of their portfolio companies and, on average, nominate 34 percent of board components. As shown in Figure 6.10, in 23 percent of the transactions VCsts acquire a majority position on the board (by nominating more than 50 percent of board components). For the remaining transactions they acquire a minority position and protect themselves by setting different control and exit rights (as will be described in the next section).

By splitting the database according to the type of transaction (expansion or buyout), we can see a relevant difference in the governing behavior of venture capitalist. Table 6.10 shows the distribution of board representation by type of transaction. In 88 percent of the expansion transactions, VCsts take a minority position on the board of directors of their portfolio companies by nominating less than 50 percent of the board components. In contrast, for the vast majority of the buyout deals included in our database (70 percent), VCsts acquire a controlling position of the board of their portfolio companies by nominating more than 50 percent of the board components (see Table 6.10).

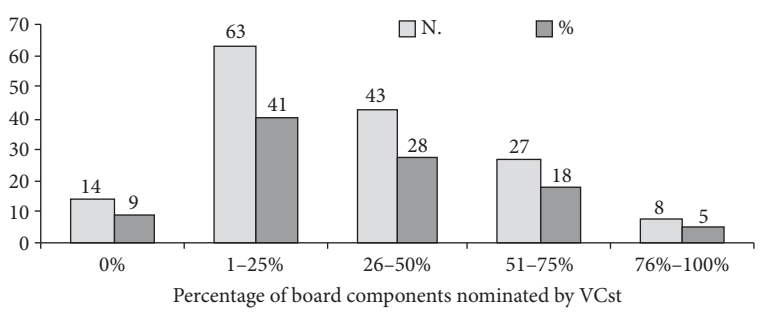

Figure 6.10 Board representation. This figure shows the frequencies associated with different classes of board representation.

Table 6.10 Board Representation by Type of Transaction (Buyout or Expansion)

Venture Capitalist Board Representation	Type of Transaction (%)		
	Expansion	Buyout	Total (%)
Minority position in the board	88	30	50.6
Majority position in the board	12	70	49.4
Total	100	100	100

Note: This table shows the frequencies associated with the board position (minority or majority) acquired by VCsts in Italy according to the type of transaction (buyout or expansion deal).

Investor Rights, Control Rights, and Exit Rights

Governance and contractual investor rights represent important mechanisms adopted by VCsts to mitigate risk and agency conflicts. The majority of the PE investments in Italy are structured in such a way as to allow VCsts to actively participate in the managing activity of their portfolio companies through different control rights (contractually regulated), veto rights, board representation, protective provisions, affirmative and negative covenants, exit rights, and stock transfer restrictions. Our database shows that VCsts in Italy benefit from a wide variety of contractual rights in order to better protect their interests and mitigate their investment risk. Similar to the results highlighted by the international empirical evidence, VCsts in Italy retain different control and protective rights, summarized as follows (see also Table 6.11):

- Cash-flow rights: claims on cash payouts.
- Dividend priorities and liquidation rights: when VCsts hold preferred stocks, they expect to have priority rights over common shareholders in the event of dividend payments, liquidation, or merger.
- Voting rights.
- Control rights: VCsts typically hold a vast set of control rights (e.g., power of hiring or firing the CEO, right to replace the founder or the entrepreneur, right to retain board control, right to set restrictive covenants or stock transfer restrictions).
- Board representation rights: the vast majority of VCsts in Italy retain the right to choose one or more board components, as well as the right to increase board representation in the case of poor firm performances or inexperienced management team.
- Veto rights: the veto rights typically included in the PE contracts concluded in Italy are related to assets sales, assets purchases, ownership changes, and equity increases.
- Information rights: investors often retain the right to receive information on financial statements and other firm-related information.

Table 6.11 Investors' Rights Included in the PE Transactions

	N	%
Automatic conversion of convertible debt	6	5
Automatic conversion of convertible preferred stocks	5	4
Liquidation rights	29	20
Information rights	122	86
First refusal in sale	111	78
Antidilution rights	113	80
Right of choosing CEO and other key managers	112	79
Right of substituting the CEO	68	50
Right to increase board representation in case of poor performance	83	59
Rights to add investors	22	16
Veto on assets sale	120	84
Veto on assets purchase	115	81
Veto on majority ownership changes	105	73
Veto on equity increases	57	40
Redemption rights (right to force the entrepreneur to acquire the venture capitalist's equity stake)	7	5
Right to force IPO	105	74
Piggyback registration rights	84	60
Co-sale agreement	124	87
Drag-along rights	122	86
Lock-up agreements	7	8

Note: This table shows the frequencies associated with the adoption of the different investor rights included in the actual contracts that we have collected and analyzed.

- Right of first refusal in sale: this represents a call option for the venture capitalist. When a shareholder wants to sell his or her shares, the PE investor has the right to buy them before the shares are offered to a third party.
- Preemptive rights on new share issues: this is the typical form of antidilution provision used in Italy. In the case of issuance of new shares, VCsts have the option of maintaining their ownership stake in the target's equity by acquiring at least the same percentage of the future share offering.
- Exit rights: the international literature shows that VCsts structure their deals in order to facilitate their future exit; they may preplan possible exit routes or retain several exit rights to ensure an exit. Venture capitalists in fact acquire an equity stake in a target company with the aim of exiting

their investment after a few years. The divestment allows them to have sufficient liquidity to guarantee a satisfactory rate of return to their external investors.[31] The majority of the PE funds in Italy are structured as closed-end mutual funds and have a limited life of ten years. Typically investments are realized in the first four or five years (investment period), followed by a divestment period. In Italy the exit routes are generally preplanned at the time of the contract, and the sale of the company is typically subject to the approval of the VCsts. Venture capitalists generally have great power over the exit and may force the company to anticipate its sale or may block the sale of a company. They usually design their transactions so as to include different protective provisions concerning the possible exit routes. For example, they may retain the right to force the company to go public (IPO rights) or the right to register their shares in a public offering (registration rights). They may have the right to include their stocks in future company registrations (piggyback registration rights).

Other exit rights typically included in Italian PE contracts are the tag-along and drag-along rights. The tag-along provision (or co-sale agreement) gives the PE investor the right to partake in any sale of stocks initiated by other shareholders (management or entrepreneur). The drag-along provision is mainly aimed at protecting majority shareholders. It provides PE investors with the power of forcing the entrepreneur to join in the sale of the company to a third party who is willing to buy the firm only with full control. Furthermore a small percentage of VCsts retain redemption rights. These rights provide the investors with a put option that allows the VCsts to sell their equity stake back to the entrepreneur if a certain period of time has passed without being able to complete any other type of exit (sale or IPO). This provision is aimed at expanding the exit alternatives available to the investors by allowing VCsts to force the entrepreneur to buy back their equity stake in the company. At the time of the IPO a lock-up agreement may also be applied. The lock-up provision prohibits the venture capitalist and other company insiders (i.e., entrepreneurs or managers) from selling their shares for a set period of time after an IPO (e.g., 180 days after the offering). This provision ensures that shares owned by insiders are not sold in the public market too soon after the offering. Lock-up agreements may also set limits on the number of shares that can be sold over a certain period of time.

Table 6.11 summarizes the investor rights typically employed by VCsts in Italy and shows the related frequencies. As highlighted in the table, redemption rights and lock-up agreements are not often included in the PE contracts, while other exit rights (e.g., the drag-along provision and co-sale agreements) are quite commonly used. In particular the drag-along provision is included in 86 percent of PE contracts, and the co-sale agreement is adopted in 87 percent of cases. Other investor rights commonly included in the PE deals are information rights (included in 86 percent of cases), antidilution rights and first refusal in sale (adopted in almost 80 percent of transactions), the right to choose the CEO (used in 79 percent of cases), and the right to increase board representation (included in almost 60 percent

of cases). Furthermore PE investors frequently tend to employ various sets of veto rights. For example, the veto on asset sale is adopted in 84 percent of cases, the veto on the asset purchases is included in 81 percent of cases, and the veto on ownership changes is seen in 73 percent of the transactions included in our sample.

In view of the contrasting empirical evidence surrounding the financial and contracting behavior of VCsts in the United States (e.g., Kaplan and Strömberg 2003) and in Canada (e.g., Cumming 2008), we separately analyzed the securities choice implemented by local and international PE funds investing in Italy (Figure 6.11).

As shown in Figure 6.11, international VCsts tend to employ more control rights, exit rights, and protective provisions than local PE investors. International VCsts seem to adopt a more sophisticated approach to risk mitigation in order to manage risks and agency problems. However, if this is true, why do international and local VCsts behave similarly when they select their forms of finance? If international PE investors are more experienced and more capable of mitigating their investment risks by holding more control and investor rights, why do they not frequently choose "sophisticated"

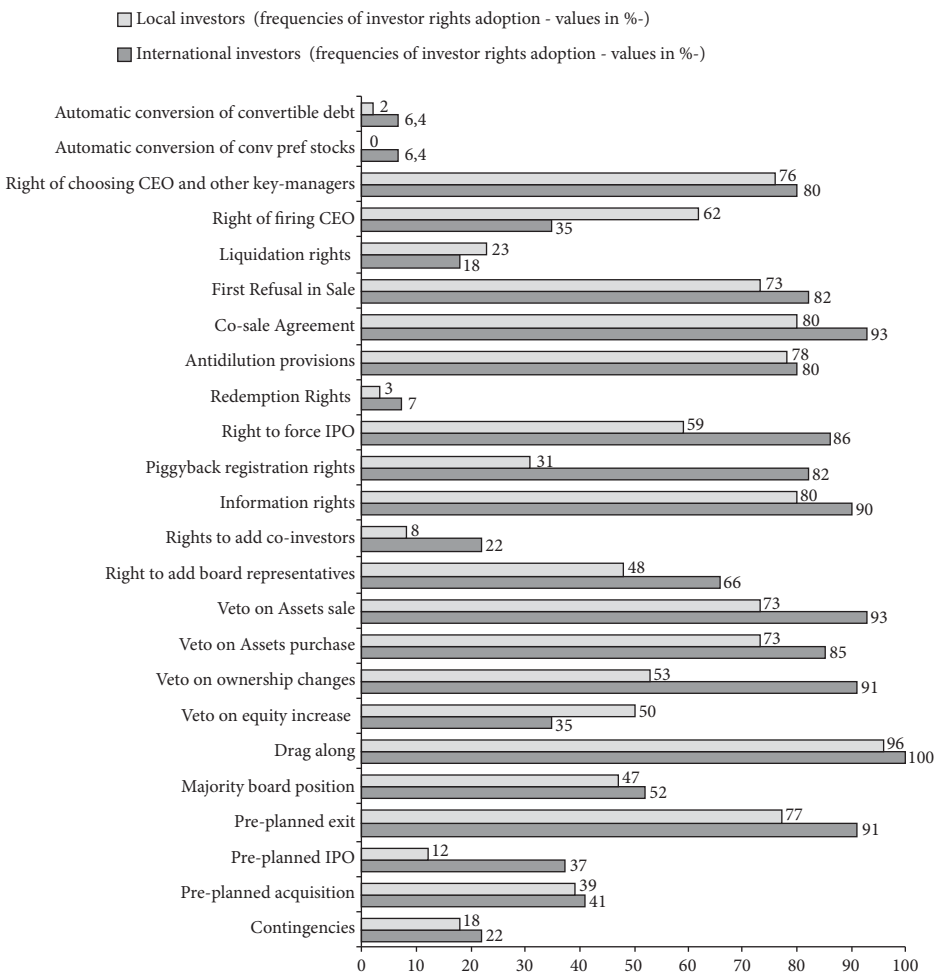

Figure 6.11 Investors' rights by type of PE fund (local or international). This figure compares the governing behavior of local and international venture capitalists in Italy.

securities (such as convertible securities) when investing in Italy? As anticipated, convertible securities are used for only a small percentage of deals by both international and local funds. International and local funds tend to use common stocks and debt instead. More empirical research in this area is needed in order to better understand the determinants underlying the security choice around the world.

Contingencies

We asked the VCsts to indicate all the events (or contingencies) upon which a change in the control rights and ownership structure would occur. Similar to the results highlighted by the international empirical evidence (see, e.g., Kaplan and Strömberg 2003; Cumming 2006), in Italy VC control rights are also contingent dependent and therefore change if some milestones or strategic objectives are achieved. In accordance with the international evidence, Italian PE deals are structured so as to attribute more control power to the entrepreneur if the company performs well. Therefore if the company reaches the preplanned milestones, the controlling power exercised by VCsts decreases over time; if the company fails to fulfill certain milestones or objectives, the VCsts acquire full control.

The most used contingencies included in the VC term-sheets are related to the achievement of

- Economic milestones (sales, EBITDA, EBIT).
- Financial milestones (ROE, EPS, cash flows, debt-equity ratio).
- Strategic objectives (such as patents, client number, strategic market positioning).

Changes in the control rights may also occur in the case of breaches of contractual investor provisions, as well as in the case of asset sale.

In 56 percent of transactions, VCsts specify a series of economic milestones upon which a change in their control rights would occur (Figure 6.12)

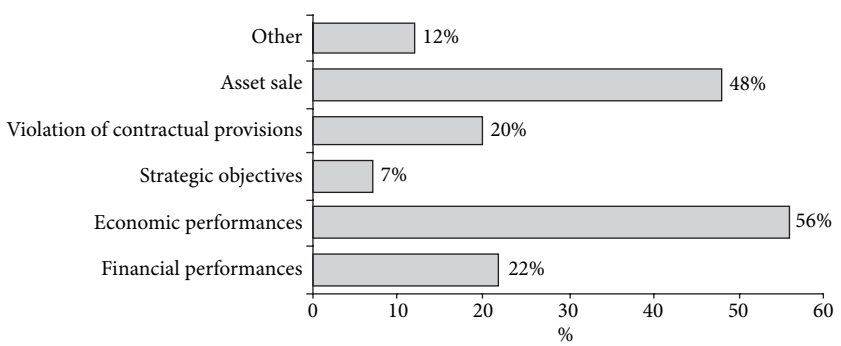

Figure 6.12 Contingencies upon which a change in the VC control rights occurs. This figure shows the frequencies related to each type of event (or contingency) upon which a change in the investor control rights occurs. (Frequencies values are expressed in %).

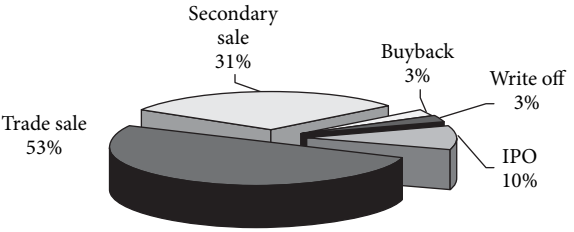

Figure 6.13 Exit routes applied in Italy. This figure shows the exit routes employed by PE investors in Italy.

Exit Routes

Among 162 PE transactions included in our database, 39 deals have reached the exit stage (up to June 2006). With reference to the 39 realized divestments, our data show that the primary exit routes adopted in Italy are the following: (a) sale of the firm to another company (trade sale), which occurs in 53 percent of the divestments; (b) sale of the company to other PE investors or institutional investors (secondary sale), which is exercised in 31 percent of cases; and (c) initial public offering (IPO) of the company's stocks, which occurs in 10 percent of the divestments (see Figure 6.13). Our data further show that entrepreneurs and venture capitalists tend not to adopt the buyback option as a possible way out (this option is exercised only in 3 percent of divestments). The remaining 3 percent of divestments are write-offs.

By comparing the investment date with the divestment date, our data set shows an average holding period of two and a half years (with a medium of three years). This is in line with the Italian PEM database, collected by AIFI in cooperation with the University Carlo Cattaneo-Castellanza.

Summary and Conclusions

The interaction between the VCst and the entrepreneur is affected by agency problems and conflicts of interests, mainly due to asymmetric information that may lead to adverse selection and moral hazard consequences. To mitigate these risks, VCsts have learned to employ different risk mitigation mechanisms, such as adopting specific forms of finance and governance strategies.

In this study we analyzed the financial and governing behavior employed by VCsts in Italy in order to mitigate the underlying investment risks. No empirical studies have analyzed this problem with reference to the Italian context. This may be explained by a data limitation problem: the data on PE governing and contracting behavior are worldwide confidential and not publicly available. This research

contributes to filling this gap by adopting a novel hand-collected database, with the hope of expanding the international literature on VC financial contracting behavior. Theoretical models on venture capital contracting behavior (Ozerturk 2008; Hellmann 2006; Dessì 2005; Repullo and Suarez 2004; Cornelli and Yosha 2003; Casamatta 2003; Schmidt 2003; Basha and Walz 2001; Hellman 1998; Trester 1998; Admati and Pfleiderer 1994; Berglöf 1994; Aghion and Bolton 1992) highlight that convertible securities are the optimal form of finance to mitigate investment risks and agency conflicts between the venture capitalist and the entrepreneur. However, recent international empirical studies on VC governing behavior (Cumming 2007, 2008; Kaplan et al. 2007; Kaplan and Strömberg 2003, 2004; Basha and Walz 2002; Cumming 2001, 2002, 2006, 2008; Black and Gilson 1998; Gompers 1997; Sahlman 1990) show mixed and puzzling results.

Despite the relatively less developed Italian VC and PE market, our study shows that VCsts in Italy adopt all the ex-ante and ex-post risk mitigation mechanisms highlighted by the international literature (i.e., screening, due diligence, syndication, stage financing, governing strategies, and sophisticated investor control and exit rights, in line with the U.S. experience discussed by Kaplan and Strömberg 2003). Furthermore international funds investing in Italy seem more concerned with risk mitigation mechanisms, by including more governing and control rights in their transaction structures compared to those of local investors. With reference to the investor rights employed in Italy, our results seem in line with the sophistication hypothesis highlighted by Kaplan et al. (2007). Our data show that both international and local PE funds tend to behave quite similarly with reference to the security choice. They both use a wide range of securities (mainly represented by common stocks and debt) and do not focus just on convertible securities. Consistent with the empirical evidence from Canada (e.g. Cumming 2005a, 2005b, 2006, 2008), convertible securities are not the most used form of finance in Italy. This is in contrast with the empirical evidence from the United States, where convertible securities represent the most frequently used security. In Italy the security choice seems more context-dependent. A puzzling question that remains unsolved is the following: If international PE funds seem more experienced and more capable of mitigating their investment risks by holding more control and investor rights, why do they not choose to structure their deals with more "sophisticated" securities (such as convertible securities) when they invest in Italy?

More research in this area is needed in order to better understand the determinants underlying the security choice and PE contracting behavior around the world. With this explorative study we hope to inspire further theoretical and empirical research on venture capital financial contracting behavior around the world.

Notes

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1. For a detailed and recent review of the literature on private equity and leveraged buyouts, see Wright et al. 2009. For an overview of the literature on the governance impact of PE and LBO transactions, see, e.g., Scandrett 2007; Kaplan and Strömberg 2009; and Cumming et al. 2010. See also Holmstrom and Kaplan 2001.
2. See also OECD 2007.
3. For a review of the literature on the value-added role provided by the venture capitalists to their portfolio companies, see Megginson 2004; De Clercq et al. 2006.
4. For an overview of the debate on the security choice and VC financing behavior, see, among others, Schäfer et al. 2004; Cumming 2008. For details on the theoretical models on venture capital contracting behavior, see, e.g., Ozerturk 2008; Hellmann 2006; Dessì 2005; Repullo and Suarez 2004; Casamatta 2003; Cornelli and Yosha 2003; Cestone 2000; Cestone and White 2003; Basha and Walz 2001; Cumming 2001; Garmaise 2000; Hellman 1998; Admati and Pfleiderer 1994; Berglöf 1994. These models especially focus on the optimal contractual scheme that mitigates asymmetric information problems between venture capitalist and entrepreneur.
5. For a recent review of the literature on the exit behavior of venture capital and private equity firms, see Espenlaub et al. 2010.
6. For an overview of the types of risks faced by venture capitalists, see, e.g., Cumming et al. 2005). For a review of the literature, see also Kut and Smolarski 2006.
7. A general review of agency costs is included in Jensen 1986, 1989; Jensen and Meckling 1976; Masouros 2009; McCahery and Vermeulen 2008. For a recent review of academic literature on the principal-agent problem in private equity settings, see, e.g., Kaplan and Strömberg 2001, 2004; Cumming 2005a, 2005b, 2006; Hartmann-Wendels et al. 2010. In a PE context, a VC who provides money to support a firm's growth represents the principal. An entrepreneur who seeks financing to undertake specific investment projects represents the agent. Agency problems are mainly caused by the presence of asymmetric information, conflict misalignment, and lack of goal verification. The presence of asymmetric information and goal conflicts between the VC and the firm increases the possibility that the entrepreneur will employ opportunistic behaviors against the interests of the venture capitalist. For example, the entrepreneur may decide to exercise less effort in the development of the financed project or, even with high effort, may decide to continue an unprofitable project. Entrepreneurs may also decide to devote time and effort to the development of low-return projects capable of increasing their personal benefits. Furthermore if entrepreneurs do not participate in the venture losses, they may have incentives to undertake excessive risk. For the venture capitalist (the principal) it may be difficult or too expensive to constantly observe and verify the individual actions or decisions made by the entrepreneur (the agent). Furthermore the success of all ventures depends on the quality of information provided by the firm to the venture capitalist and on the effort of both the entrepreneur and the venture capitalist (double-sided moral hazard problems). The economic literature has highlighted various types of agency problems and conflicts

that may affect the relationship between the venture capitalist and the entrepreneur (e.g., information problems that may lead to adverse selection, effort problems that may lead to moral hazard, hold-up, free-riding, window dressing). For a recent review of the literature on agency problems and possible conflicts of interest in private equity settings, see, e.g., Tykvova 2007; Kut and Smolarski 2006; Wright et al. 2009; Hartmann-Wendels et al. 2010. For an overview of the typical agency problems that may arise in a private equtiy context, see, e.g., Cumming 2005a, 2005b, 2006; Kaplan and Strömberg 2000, 2001, 2004. See also Smolarski et al. 2005.

8. For an overview on agency problems in private equity settings, see, e.g., Tykvova 2007; Cumming 2005a, 2006; Schäfer et al. 2004; Schmidt 2003; Kaplan and Strömberg 2001.
9. For a recent review of the literature on the risk mitigation mechanisms employed in a PE context, see, e.g., Hartmann-Wendels et al. 2010; Wright et al. 2009; Tykvova 2007; Kut and Smolarski 2006; Schäfer et al. 2004; Kaplan and Strömberg 2001, 2003, 2004; Schertler 2000; Millson and Ward 2005; Smolarski et al. 2005.
10. However, the evidence on the portfolio strategies adoptable by venture capitalists is mixed. See Hochberg and Westerfield 2010 for more details on this matter.
11. For recent reviews of the theoretical and empirical literature on contracting and control rights, see Schertler 2000; Hart 2001; Bienz and Hirsch 2006; Hellmann 2006; Tykvova 2007; Cumming 2008.
12. The empirical evidence of the impact of governance on firm performance is, however, mixed. For more details, see Suchard 2009; Bebchuk et al. 2009. For recent reviews of the literature on PE governance, see Cumming et al. 2010; Wright et al. 2009; Bonini et al. 2011; Achleitner et al. 2009; Gompers et al. 2010. For more details on the impact of corporate governance on value creation, see, e.g., Acharya et al. 2010; Allen and Song 2002; Chen et al. 2009; Cornelli and Karakas 2008; Hochberg 2008; Wright et al. 2008.
13. See, e.g., Schäfer et al. 2004 for details on the underlying reasons of the security choice debate. See also Basha and Walz 2000, 2001, 2002; Bienz and Hirsh 2006; Bienz and Walz 2007; Da Rin et al. 2006; Harris and Raviv 1985, 1990, 1992.
14. For a theoretical overview and discussion of these models, see Hellmann 2006.
15. For detailed literature reviews of the theoretical models on venture capital contracting and on the wide use of convertible security in venture capital financing, see Ozerturk 2008; Hellmann 2006; Kaplan et al. 2007.
16. In the model of Schmidt (2003), convertible securities also mitigate a double-sided moral hazard problem. For overviews of the theoretical models on the use of convertible securities, see Tykvova 2007; Hellman 2006; Schertler 2000; Gompers 1993.
17. See: Repullo and Suarez 2004; Hellman 1998; Admati and Pfleiderer 1994; Berglöf 1994. Furthermore, according to the analysis of Kaplan and Strömberg (2003), convertible preferred stocks appear in 204 of 213 venture capital contracts.
18. See also Cumming 2001.
19. For greater details on the determinants of Canadian venture capital contracts, see Cumming 2002, 2005a, 2005b, 2006, 2008.
20. The sophistication is proxied by size of the VC (in terms of capital under management), age of VC firms (at least four years), and previous U.S. experience. Kaplan et al. (2007) find that VCsts are more likely to use the U.S.-style contract when they are older, larger, and have U.S. experience.
21. See also Black and Gilson 1998.
22. For details on regulation of Italian PE activity, see Cumming and Zambelli 2010.
23. See AIFI 2005.

24. For details, see also Zambelli 2010; Cumming and Zambelli 2010.
25. According the Private Equity Monitor Survey (AIFI-PEM survey), the number of investors active on the PE market was lower. In fact the number of investors active in the buyout sector was 25 (according to AIFI statistics, 2005, 1st semester). The number of active investors in the private equity sector was 57 (according to the PEM Database, 2005). However, the identification of the investor active in the PE sector was not available. In order to minimize potential selection biases we sent the questionnaire to all 88 AIFI members. According to ex-post analysis the number of active investors in the PE sector was 56, in line with PEM database (57).
26. In particular, each PE firm received the following questionnaire package:

    – Personalized and signed cover letter, indicating the university affiliation of both authors, with the aim of presenting the authors and explaining the purpose of the research project and the questionnaire.
    – Questionnaire (four pages long; six sections: deal characteristics; selection criteria; valuation; contracting; governance; exit strategies).
    – Confidential agreement.
    – A reward promise, in terms of follow-on finding-reports and invitation to attend future potential related conferences organized by the authors (for those who declared an interest in being updated).
    – A short booklet with instructions for completing the questionnaire and definitions of the key PE terms used in it.

27. To minimize potential response biases, during the interview each investor had a hard copy of the questionnaire with the possibility of reading and filling out the questionnaire in person.
28. The major constraint underlying our survey was the need to establish a relationship of trust between the venture capitalists and us, because it involved confidential information about the specific private equity deal and governance structure. Several factors may have positively affected a relationship of trust with the investors and improved the response rate: the confidentiality agreement signed with a lawyer, which was included in each questionnaire package; personal visits and interviews, aimed at providing detailed information on the objective and motivation underlying the survey; the university affiliation of the authors; the nonprofit goals of the project, and the credibility of the authors due to their research activity in the field.
29. For more details see Cumming and Zambelli 2010; Zambelli 2010a.
30. For reference, see Lerner et al. 2008.
31. For more details on the liquidity risk run by PE investors, see Cumming et al. 2005. For more details on the PE exit behavior, see, e.g., Espenlaub et al. 2010 and Cumming et al. 2010.

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PART III

PRIVATE EQUITY SYNDICATION

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CHAPTER 7

SYNDICATE PARTNER SELECTION: WHO SYNDICATES WITH WHOM?

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Syndication is not a new phenomenon in the private equity industry. In the 1950s, prior to the dominance of the limited partnership structure, many transactions were funded on an ad hoc basis by a syndicate of institutional investors, companies, and wealthy individuals (Investment Bankers Association of America, 1955). Today consortia increasingly roam the buyout and merger landscape (Wright et al., 2006; Lerner et al., 2004). A handful of academic articles credit syndicates with the ability to enhance returns (Guo et al., 2011; Cumming et al., 2007; Nikoskelainen and Wright, 2007; Gompers and Lerner, 2004; Brander et al., 2002) or discuss syndicate motives (see Table 7.1). Yet the syndication process itself remains largely unexplained (Wright and Lockett, 2003; Lockett and Wright, 2001). Why do acquirers team up? Who syndicates with whom? On what grounds do acquirers choose their syndicate partner?

In 2007 more than twelve hundred syndicated transactions were completed in the United States alone, and the number of syndicate deals more than doubled every year starting from a base of forty-four syndicate deals in 1998, according to Merger Market data (July 7, 2008). Syndicate transactions now account for 91 percent of all American buyouts above USD 5 billion and 38 percent of the public-to-private transactions with a value between USD 250 and USD 1 billion (Cornelius et al., 2007). This study differentiates three types of syndicate transactions. The first class refers to the most common form of syndication: syndicates that are composed

Table 7.1 Summary of Studies of Syndication

Author	Sample Description	Data Source	Method of Analysis	Summary of Findings
Bygrave (1987)	1,501 first-round syndicate transactions completed by 464 venture capitalists from 1966 to 1982	Venture Economics	Correlation	The study concludes that the U.S. venture capital industry is highly concentrated: 61 firms, connected by an extensive network of co-investments, control over half of the total U.S. venture capital. Moreover increased uncertainty of the target company leads to increased syndication. Also, the sharing of knowledge seems to be more important than spreading of financial risk. Due to the importance of knowledge, the author expects increasing specialization by venture capital firms
Lerner (1994)	271 biotech firms that received venture capital between 1978 and 1989 in 651 investment rounds, prior to going public	Venture Economics and Recombinant Capital	Pearson's chi-square test, probit regression	Experienced venture capitalists primarily syndicate first-round investments to venture capitalists with similar levels of experience. In later rounds less experienced venture capitalists are also invited
Chiplin et al. (1997)	1,999 first–stage venture capital and private equity investments in U.K.-based firms between 1989 and 1995	Center for Management Buyout Research at the University of Nottingham; semistructured interviews (22 chief executives of U.K. venture capital firms)	Logit analysis, analysis of interconnectedness of the venture capital network (centrality, intensity, and weighted measure of the strength of the connection)	Syndication (i.e., joint decision making) improves the selection of investment opportunities. The study finds weak support for the hypothesis that riskier transactions are more often syndicated than less riskier ones. The interviews reveal that syndicate leaders first close transactions and only subsequently syndicate a part of the equity to syndicate partners. The syndicate partner choice is influenced by the transaction size, the feeling that a particular partner can bring added value, and that a partner is similar to the lead acquirer in type and aim. Finally, the study shows that the U.K. venture capital industry is a composed of a highly dense network and is dominated by a few major venture capitalists
Lockett and	60 U.K.-based firms backed by venture	Questionnaire	Mann-Whitney U test, Wilcoxon	The motives for syndication appear to be driven more by finance considerations (risk sharing) than by the exchange of firm-specific resources (risk reduction)

Wright (2001)	capital and private equity firms		matched pairs test	or access to reciprocal deal flow. However, the resource-based motive is more important for management buyout than venture capital syndicates
Brander et al. (2002)	584 (partial) exits (243 are syndicated) of firms that received venture capital backing between 1992 and the first quarter of 1998 in Canada	Macdonald & Associates	T-tests, regression	Syndication potentially improves the selection of investment opportunities by providing a second opinion. Moreover the study indicates that syndication adds value in the postinvestment phase, as syndicated investments show higher returns than stand-alone investments. The authors also recognize that the desire to share risk can be a key motive to syndicate an investment
Wright and Lockett (2003)	First study samples 58 venture capitalists active in 1998; second study covers 56 venture capitalists, active between 1999 and 2000; all in the U.K.	Questionnaire, syndicate documentation, discussions with venture capital executives	Mann-Whitney nonparametric tests, McNemar's test, Wilcoxon signed-rank test	The study concludes that a high proportion of venture capital firms act as both leads and nonleads in different syndicates over time. Lead investors typically hold larger equity stakes, supplying them with residual powers to ensure timely decision making in unexpected situations (e.g., risk of default or unsolicited offers from strategic buyers to purchase the investee). Nonlegal sanctions, especially reputation mechanisms, are more important than legal sanctions when managing syndicates. Finally, the authors argue that risk sharing rather than resource-based motives is the reason to syndicate
Bruining et al. (2005)	317 venture capitalists in 6 European countries	Questionnaire	Pearson correlations, confirmatory factor analysis, ordinal regression model	The study finds a curvilinear relationship between the firm size of the venture capitalists and the decision to participate in syndicates. Smaller venture capitalists have a transaction costs advantage in early-stage deals and can use their relative flexibility and niche-filling capacities. On the other hand, larger venture capitalists leverage their scale advantage, mostly in later stage investments. Moreover venture capitalists prefer to syndicate with larger and established syndicate partners, although this may not be sensible in early stage deals
Manigart et al. (2006)	719 venture capitalists in 6 European countries active in 1998	Questionnaire	Mann-Whitney U test, ordinal regression model,	In Europe syndicates are motivated more by financial considerations than the desire to exchange firm-specific resources or future deal flow considerations, in contrast to practices in North America. Resource-based motives are

(*continued*)

Table 7.1 (continued)

Author	Sample Description	Data Source	Method of Analysis	Summary of Findings
			binomial logit regressions, OLS regression	more important for nonlead than lead investors. Nascent venture capitalists syndicate more often than established venture capitalists; arguably out of an understanding that syndication with respected partners increases their legitimacy and reputation. Larger venture capitalists syndicate more than smaller venture capitalists, although smaller firms may benefit more from the diversification effects of syndication. This is in contrast to the financial motive theory. Lead investors often initiate the investment
Lehmann (2006)	108 German-based venture-backed firms, with a listing on the Neuer Markt between 1997 and 2002	IPO prospectuses, information from the German Patent Office, the Deutsche Börse, Datastream, and OnVista	Two-sample t-tests, probit and negative binomial estimation, OLS regression	The study argues that risk sharing rather than resources-based motives are the reason to syndicate. However, the study also supports the hypothesis that syndication adds value by means of pooling resources, as syndicate investments show higher growth rates than stand-alone ventures
Tykvová and Schertler (2006)	3,591 (2,450 are syndicated) cross-border transactions of European private equity investors between 2000 and 2004	Bureau van Dijk's ZEPHYR database, World Competitiveness Yearbook, VCPro database	Correlation, tobit estimations, multinomial logit model	The authors argue that (foreign) private equity firms without experience in a particular country can lower the costs of their cross-border investments by syndicating with "informed" (local) investors with an already established presence in the target country. Moreover cross-border private equity transactions respond more strongly to a given GDP growth differential when the target country has a mature rather than poorly developed private equity industry
Kogut et al. (2007)	159,561 venture capital–backed firms in the United States between 1960 and 2005	Venture Economics	Correlation, power law estimation, weighted clustering coefficient, logit panel regression	The study finds a tendency for incumbents to form links with other incumbents by means of syndication. Moreover venture capitalists show a preference to repeatedly syndicate with a small group of venture capitalists, thereby forfeiting additional (sectoral and geographical) diversification advantages that can be gained by syndicating with new syndicate partners.

solely of private equity firms. An illustration of such a transaction is the USD 2.2 billion buyout of the European media group SBS Broadcasting in 2005, in which private equity investors Permira and Kohlberg Kravis Roberts & Co teamed up. The second category refers to syndication among corporate acquirers. An example is the 2008 takeover of Scottish & Newcastle by Heineken and Carlsberg for USD 15.4 billion. The third type concerns a hybrid form: syndicates that are composed of both private equity firms and corporate acquirers. An example of such a hybrid syndicate is the USD 2.8 billion buyout of Metro-Goldwyn-Mayer, the producer and financer of motion pictures, in 2005 by Sony and private equity investors Texas Pacific Group, Providence Equity Partners, and DLJ Merchant Banking.

In this study we investigate the syndicate partner selection process on the basis of syndicate motive theories. In doing so, the study tests the conventional theories of syndication in the context of leveraged buyouts. Moreover this research shifts the focus from motive theories to the syndicate partner selection process. We are aware of only one other study (Lockett and Wright, 2001) that has explored the syndicate partner selection process. The study contributes to the literature by also examining hybrid syndication between private equity investors and corporate acquirers. This issue has been unexplored by previous studies.

These hybrid syndicates stand at odds with the traditional perspective that places private equity and corporate acquirers in a dichotomous relation, as competing against rather than collaborating alongside each other (Halpern et al., 2005; Jin and Wang, 2002). However, the distinction between private equity firms and corporate acquirers is no longer clear-cut. Occasionally private equity firms are referred to as conglomerates (Sudarsanam, 2003; Temple, 1999) or resemble corporate acquirers after building a significant industry presence through buy-and-build strategies (Jin and Wang, 2002). Moreover there appears to be increasing cooperation between private equity firms and corporate acquirers (Guo et al., 2011). For example, the Blackstone Group places partnerships with multinationals such as Sony and General Electric at the core of its investment approach. Blackstone mentions that in the 1987–2007 period it closed forty-four transactions together with corporate acquirers, amounting to a total equity value of USD 7.1 billion (Blackstone, 2008). Our study is among the first to shed light on the underlying motives for these hybrid syndicates.

Our results show that lead acquirers invite syndicate partners with financial resources that match the buyout's financing requirements. Our data also reveal a contrasting pattern when it comes to inviting syndicate partners out of a need to gain complementary knowledge. European lead acquirers invite syndicate partners with a lesser track record in the target company's industry and country. Conversely, North American lead acquirers invite syndicate partners with a stronger country track record than their own. Corporate acquirers are more likely to be invited as syndicate partners to acquire less diversified companies. In Europe corporate acquirers are invited as syndicate partners for buyouts in countries with relatively low mergers and acquisitions (M&A) activity and underdeveloped stock markets.

Hypotheses

In this section we develop a number of hypotheses relating to the syndicate partner selection process. We derive a capital constraints hypothesis that is tested using syndicates between private equity investors only. The complementary resource hypothesis relates to both private equity and corporate lead acquirers. Next we formulate a divisional interest hypothesis concerning the existence of hybrid syndicates that can be formed with the lead acquirer being a private equity investor or a corporate acquirer. Finally, we derive a paved exit route hypothesis to explain why we observe private equity lead acquirers syndicating deals to corporate partners.

Capital Constraints Hypothesis

The capital constraints theory asserts that private equity firms invest only a portion of their capital in a single portfolio company. Individual investments can typically be no larger than 10 percent of the total fund size (Cornelius et al., 2007; Fenn et al., 1997). The capital constraints argument can be traced back to the financial risk-sharing notion that builds on the theory of portfolio diversification (Manigart et al., 2006; Bruining et al., 2005; Chiplin et al., 1997; Chowdhry and Nanda, 1996; Wilson, 1968). According to this hypothesis, private equity firms reduce their overall portfolio risk by investing the fund's capital in a large number of different companies, thereby minimizing the company-specific risks that are associated with individual investments (Gompers and Lerner, 2004). At the heart of the argument is the desire of private equity firms to spread risk, thereby reducing total portfolio risk ex ante (Lerner, 1994), or to exploit investment opportunities that would otherwise breach internal risk limits (Cumming et al., 2007).

Nowadays certain private equity firms command funds that are sufficiently large to finance large takeovers individually, without the need to syndicate for financial motives (Wright et al., 2006; Fenn et al., 1997). However, these private equity firms are reluctant to do so because they seek diversification. Moreover certain target companies simply remain too big to acquire alone. In fact until 2007 private equity firms had shown a growing interest in these large buyout candidates, according to Cornelius et al. (2007), because bidding competition in the megabuyout segment is lower than in the midcap segment. It is thus to be expected that lead acquirers syndicate transactions to other private equity investors with financial capabilities that match the size of the transaction. Note that this hypothesis relates only to private equity firms and not to corporate acquirers because it is difficult to proxy for the financial capabilities of corporate acquirers. The first hypothesis proposes:

> H1: The larger the transaction value, the more likely it is to be syndicated to a syndicate partner with a large fund size.

Complementary Resource Hypothesis

Syndication also occurs when the requisite financial resources are modest (Brander et al., 2002). The complementary resource hypothesis builds on the resource-based theory of the firm and asserts that acquirers, through syndication, share information, industry knowledge, and management skills. The pooling of resources increases the potential to add value to the portfolio company postinvestment (Cumming et al., 2007; Bruining et al., 2005; Wright and Lockett, 2003). The complementary expertise of the syndicate partner can be related to a specific industry as well as geographical area (Kogut et al., 2007). Wright et al. (2006) suggest that private equity firms with a general profile syndicate with more specialist private equity firms to gain access to industry-specific knowledge. Private equity firms with a specialized industry focus are associated with higher returns, more effective monitoring, and better advising capabilities (Cressy et al., 2007). Next to industry knowledge, country-specific expertise, that is, the ability to locally monitor the portfolio company, is associated with the potential to add value to portfolio companies (Sorenson and Stuart, 2001; Fenn et al., 1997). Tykvová and Schertler (2006) find that cross-border transactions syndicate more often than non-cross-border transactions. They argue that a private equity firm without experience in a particular country can lower the cost of a cross-border investment by syndicating the transaction with a reliable, "informed" local investor in the country of the portfolio company. The second hypothesis proposes:

H2a: A transaction is more likely to be syndicated to a syndicate partner with a track record in the primary country of the target company that complements the lead acquirer.

H2b: A transaction is more likely to be syndicated to a syndicate partner with a track record in the primary industry of the target company that complements the lead acquirer.

Divisional Interest Hypothesis

The third hypothesis addresses the inclusion of corporate acquirers in syndicates. According to the divisional interest hypothesis, an acquirer—especially a corporate one—is interested only in certain businesses of the target company. A syndicate splits and divides the target company postbuyout, selling the undesired assets to syndicate partners. In this manner syndicates increase the fit between the target company and acquirer and consequently optimize the potential for synergies. For corporate acquirers this expands the range of attractive assets that can be acquired. In addition, small and distinct divisions of a company are easier to integrate than a larger diversified firm. In case of hybrid syndicates, corporate acquirers acquire the specific business parts that are to their exclusive interest. Additionally corporate acquirers possess operational and industry knowledge and can enjoy synergies

with their existing operations (Guo et al., 2011). Private equity firms, apart from acquiring the remaining parts, provide advanced skills with regard to structuring complex transactions and breaking up target companies (Butler, 2001). Thus corporate acquirers as well as private equity investors that act as lead acquirers have an interest in forming a hybrid syndicate under this theory, albeit for different reasons. The third hypothesis proposes:

H3: When the target company is active in a wide range of industries, it is more likely that a hybrid syndicate is formed.

Paved Exit Route Hypothesis

The paved exit route hypothesis builds on the notion that private equity firms benefit from divestitures (Fluck et al., 2005; Gompers and Lerner, 1998, 2004). If exit opportunities are scarce, the private equity firms face a so-called exit risk (Cumming et al., 2005). Syndication offers a way to mitigate this risk by syndicating the transaction to a corporate acquirer that, whether or not contractually bounded ex ante to the investments, is a potential trade sale buyer. Research by KPMG and the Gulf Venture Capital Association (2007) reports that in 2006 four out of the thirteen private equity exits in the Middle East and North Africa, regions renowned for tough exit opportunities, were sales to a corporate acquirer in the syndicate. The most common exit route is the trade sale to a corporate acquirer (World Economic Forum 2008), and consequently the state of the trade sale market affects the exit prospects that private equity firms face. Wright et al. (2006) conclude that the difference between the stock markets of various countries influences the viability of private equity firms to divest via the IPO route. Tykvová and Schertler (2006) note that countries with well-developed stock markets attract more private equity investors than countries with less-developed stock markets. The fourth hypothesis proposes that private equity lead acquirers are more likely to form a syndicate with a corporate partner when the exit potential is poor.

H4a: When the target company's primary industry shows low M&A activity, it is more likely that a transaction is syndicated to a corporate acquirer.

H4b: When the target company's primary country shows low M&A activity, it is more likely that a transaction is syndicated to a corporate acquirer.

H4c: When the target company's primary country shows low IPO activity, it is more likely that a transaction is syndicated to a corporate acquirer.

H4d: When the target company's primary country has an underdeveloped stock market, it is more likely that a transaction is syndicated to a corporate acquirer.

Methodology and Data

We analyze the syndicate partner selection process from the perspective of the lead acquirer, hereby assuming that (i) the decision to syndicate at all is already made, (ii) lead acquirers are familiar with the target companies prior to selecting their syndicate partner(s), and (iii) lead acquirers can choose between private equity and corporate syndicate partners. Hypothesis 1 is tested by means of a Pearson correlation test, hypotheses 2 to 4 by an independent t-test. Due to limitations in the data set, multivariate testing is difficult.

The syndicated transactions are sourced from the Thomson VentureXpert database over the period January 2000 to November 2008. The geographical scope is restricted to buyout targets in North America and Europe. North America includes the United States and Canada. The vast majority of the acquirers originate from this region as well, although in a small number of transactions (6.7 percent) acquirers from other parts of the world are involved. The United States and Europe host the world's largest and most developed private equity markets and account for over 90 percent of total buyout activity (World Economic Forum 2008).

The sample includes investment in which the syndicates acquire 100 percent of the target company. In eighteen (6.1%) buyouts (one of) the syndicate partners already owned part of the target. The transactions are classified as either a private equity, corporate, or hybrid syndicate. Syndicates consisting of three or more partners are analyzed at the syndicate partner level. This allows us to perform a one-on-one comparison between every single syndicate partner and lead acquirer. Of the 2,845 syndicated transactions in the selected period, 2,548 transactions are filtered out because of missing data (1,484 transactions), failing to classify as one of the three syndication types (633 transactions), not being able to identify the lead acquirer (414 transactions), or double counts (17 transactions). Lead acquirers are identified via obligatory filings at stock market authorities using the EDGAR Full Text Search function of Thomson Research. In cases where EDGAR is unavailable or inconclusive, the lead acquirer is identified on the basis of newspaper articles or, following Lockett and Wright (2001), assuming that the syndicate partner with the largest equity stake is the lead acquirer.

The track records of the various syndicate members are compiled on the basis of Thomson VentureXpert's company analysis and private equity module, starting from January 1985. The industry classification follows Thomson's Venture Economic Industry Classification. This index differentiates ten industries. A more detailed industry classification could not be used, as the track records of private equity firms are available only at the Venture Economic Industry Classification level. Data on exit activity are derived from WDI Online and the Thomson VentureXpert deal analysis module. Certain analyses excluded syndicate members when the relevant data were not available. All data are corrected for outliers by omitting observations with a value three times the standard deviation above or below the mean.

The sample includes 297 syndicated buyouts, roughly equally divided over North America (54.2 percent) and Europe (45.8 percent). Table 7.2 shows the distribution of the syndicate buyouts over time. With 194 buyouts (65.3 percent), private equity syndicates account for the majority of sampled syndicate transactions, followed by hybrid syndicates (23.9 percent) and corporate acquirers syndicates (10.9 percent).

Table 7.3 shows descriptive statistics. The number of syndicate partners per syndicate, including lead acquirers, ranges from two to fifteen, with the overall average being 2.7 syndicate members. In more than half of the transactions (61.3 percent) the syndicate consists of two acquirers. In a quarter (24.6 percent) of the transactions the syndicate consists of three members. Larger syndicates are less common. Private equity firms lead most of the transactions (76.1 percent), due to the fact that the majority of syndicates are composed solely of private equity firms. However, corporate acquirers mostly lead hybrid syndicates (56.3 percent). The transaction values range from USD 1 million to almost USD 33 billion and averages at USD 914.13 million. Ten buyouts are larger than USD 10 billion, seven of which concern target companies in North America. The greater part of the sampled transactions (143 buyouts or 48.1 percent) is divisional buyouts. In roughly one-third of the transactions (94 buyouts or 31.6 percent) the target is a publicly listed company, with the remainder being private-to-private transactions (60 buyouts or 20.2 percent). Public-to-private transactions are more frequent in North America (67 buyouts) than in Europe (27 buyouts). The sample includes 383 private equity firms, 106 of which participate in more than one of the sampled transactions. The vast majority (59.2 percent) is from North America, followed by Europe (35.4 percent) and the rest of the world (5.4 percent). There are 156 different corporate acquirers present in the data set, of which three are involved in two

Table 7.2 Syndicated Transactions from January 2000 until November 2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Private equity syndicates	17	13	18	16	24	34	39	28	5	194
- North America	9	5	12	10	15	15	22	18	2	108
- Europe	8	8	6	6	9	19	17	10	3	86
Corporate acquirer syndicates	2	3	2	2	2	6	4	6	5	32
- North America	1	2	1	1	1	1	2	4	4	17
- Europe	1	1	1	1	1	5	2	2	1	15
Hybrid syndicates	7	4	3	8	6	11	18	12	2	71
- North America	5	1	0	3	2	8	12	5	0	36
- Europe	2	3	3	5	4	3	6	7	2	35
Total	26	20	23	26	32	51	61	46	12	297

Table 7.3 Descriptive Statistics

Variables	Statistics				
Acquirers per Syndicate (#)	**N**	**Min**	**Max**	**Average**	**Std. Dev.**
Overall	297	2	15	2.664	1.224
- North America	161	2	15	2.65	1.424
- Europe	136	2	7	2.68	0.989
Transaction Values by Region of Target (USD mil.)[1]	**N**	**Min**	**Max**	**Average**	**Std. Dev.**
Overall	286	1	10965	914.13	1474.974
- North America	154	1	10965	889.05	1517.932
- Europe	132	2	8547	943.38	1428.424
Transaction Values by Syndicate Type (USD mil.)[1]	**N**	**Min**	**Max**	**Average**	**Std. Dev.**
Overall	286	1	10965	914.13	1474.974
- Private equity syndicate	186	3	10965	946.78	1563.566
- Corporate acquirer syndicate	31	1	5402	421.94	981.033
- Hybrid syndicate	69	13	5980	1047.23	1382.409
Transaction Values by Region of Acquirer (USD mil.) [1]	**N**	**Min**	**Max**	**Average**	**Std. Dev.**
Overall	763	1	13511	1250.35	1975.848
- North America	420	1	13511	1405.4	2377.302
- Europe	292	7	8547	984.28	1446.485
- Rest of the world	51	2	8547	1496.89	1700.618

Status of Target Companies (#)	**Private**		**Public**		**Division**	
	N	**%**	**N**	**%**	**N**	**%**
Overall	60	20.2	94	31.6	143	28.1
- North America	40	18.6	67	41.6	64	39.8
- Europe	30	22.1	27	19.9	79	58.2

Composition of Hybrid Syndicates	**Private equity firms**		**Corporate acquirers**	
	N	**%**	**N**	**%**
Overall	110	55.8	87	44.2
- Lead acquirers	31	43.7	40	56.3
- Syndicate partners	79	62.7	47	37.3

[1] We corrected for outliers by omitting observations with a transaction values three times the standard deviation above or below the mean. The "Transaction values by syndicate type" weighs every syndicated buyout once. The 'Transaction value by region of acquirer' takes the average across syndicate partners.

transactions. The vast majority (105 companies or 66.0 percent) of the corporate acquirers are publicly listed, followed by privately held firms (45 companies or 28.3 percent). Three corporate acquirers (1.9 percent) are governmentally owned. For six firms (3.8 percent) the public status could not be obtained. Most corporate acquirers reside in Europe (74 companies or 47.4 percent), followed by North America (63 companies or 40.4 percent), with the remaining companies coming from the rest of the world (19 companies or 12.2 percent). Eighty transactions are cross-border buyouts, the vast majority of which (60) concern European target companies. European acquirers (35.7 percent) engage more often in cross border transactions than their North American counterparts (14.4 percent). Additional tests on cross-border buyouts did not yield interesting insights.

Results

The first hypothesis relates the deal size to the financial resources of the syndicate partner. Table 7.4A shows that the Pearson correlation test indicates a positive correlation between transaction value and the fund size of the syndicate partner, offering support for hypothesis 1. The results hold for syndicate partners from both North America ($r = 0.444$, $p < 0.01$) and Europe ($r = 0.220$, $p < 0.01$). Acquirers from the rest of the world are ignored due to a low number of observations. Please note that hypothesis 1 only relates to syndication between private equity investors. Table 7.4B reveals that the number of syndicate partners that are invited to syndicate correlates positively with transaction size ($r = 0.227$, $p < 0.01$). Thus lead acquirers invite more syndicate partners when buying out larger target companies.

Table 7.4A Correlation between Transaction Value and Fund Size of Syndicate Partners

Syndicate Partner Region	Correlation Coefficient	Sig. (1-tailed)	N
Overall	0.446	0.000	237
- North America	0.444	0.000	164
- Europe	0.22	0.037	67
- Rest of the world	−0.389	0.223	6

Note: Results of a Pearson correlation analysis that relates transaction values (USD million) with fund sizes of syndicate partners (USD million), split by the region of the syndicate partner. We include private equity investors only and exclude private equity investors without fund size information. We corrected for outliers by omitting observations with a transaction value or fund size three times the standard deviation above or below the mean.

Table 7.4B Correlation between Transaction Value and Number of Syndicate Partners

Syndicate Partner Region	Correlation Coefficient	Sig. (1-tailed)	N
Overall	0.227	0.000	242
- North America	0.221	0.003	168
- Europe	0.266	0.014	68
- Rest of the world	0.811	0.025	6

Note: We include private equity investors only and exclude private equity investors without fund size information. We corrected for outliers by omitting observations with a transaction value or number of syndicate partners three times the standard deviation above or below the mean.

Unreported results show that in the vast majority of the transactions (82.8 percent) lead acquirers need to spend more than 10 percent of the total capital of their fund to buy out a target company, in case they would not have syndicated the investment ($t = 6.938$, $p < 0.01$). The sheer value of the transaction thus forces lead acquirers to syndicate transactions to prevent breaching diversification guidelines.

Our results are in line with previous research studies by Cornelius et al. (2007), Bruining et al. (2005), Lockett and Wright (2001), Chiplin et al. (1997). Research by Gompers and Lerner (1999) states that risk reduction motives may be more important in the United States than in the United Kingdom. This might explain the higher correlation for North American syndicate partners compared to their European counterparts. An alternative explanation can be found in the interregional differences in average transaction values. The average value of the transactions completed by North American syndicate partners (USD 1,405 billion) is significantly larger than the European average of USD 984.28 million ($t = 2.933$, $p < 0.05$).

The second hypothesis focuses on complementary knowledge between lead acquirers and syndicate partners. Knowledge is proxied by the acquirer's track record, that is, the number of investments prior to the sampled syndicate buyout. The track record measures two dimensions: transaction in the primary country (Table 7.5A) and primary industry (Table 7.5B) of the target company. Tables 7.5A and 7.5B indicate contrasting patterns for syndicate partners from North America and Europe. In Europe lead acquirers have completed more transactions in the target company's country ($t = -1.986$, $p < 0.05$) and industry ($t = -2.173$, $p < 0.05$) than syndicate partners. North American lead acquirers have completed fewer transactions than their syndicate partners, although the differences are only statistically significant at the country level ($t = 1.980$, $p < 0.05$). Thus North American lead acquirers choose syndicate partners that, on average, are more experienced than they themselves are at the country level. This implies that the need for complementary knowledge is important for North American, but less important for European acquirers when choosing syndicate partners.

Table 7.5A Difference in Number of Acquisitions in Target Company Country between Lead Acquirers and Syndicate Partners

	Syndicate Partner		Lead Acquirer				
Acquirer Region	N	Mean	N	Mean	Mean Difference	t-value	Sign. (2-tailed)
North America	231	61.57	137	42.78	18.786	1.980	0.049
Europe	120	11.74	104	26.57	−14.826	1.980	0.049
Rest of the world	22	2.18	19	3.11	−0.923	−0.663	0.511

Note: Results of an independent t-test that compares the average number of transactions in the target company country between lead acquirers and syndicate partners, split by the region of the syndicate partner. We exclude acquirers without acquisition track records and correct for outliers by omitting observations with a number of previous acquisitions three times the standard deviation above or below the mean.

Manigart et al. (2006) provide a potential explanation for these findings. Their research indicates that American firms seem to be more aware of the additional, nonfinancial, benefits of syndication. Following Wright et al. (2006), an alternative explanation can be found in the large number of industry-specialized acquirers in North America. The European markets may be too fragmented to allow for such a high level of specialization. The difference at the country level is more surprising. European acquirers pursue more cross-border transactions than their North American peers, which would increase the need for country-specific knowledge. Two things are worth mentioning here. First, European acquirers engaging in a cross-border transaction more often have office representation in the target country (57.4 percent of the transactions) than North American

Table 7.5B Difference in Number of Acquisitions in Target Company Industry between Lead Acquirers and Syndicate Partners

	Syndicate Partner		Lead Acquirer				
Acquirer Region	N	Mean	N	Mean	Mean Difference	t-value	Sign. (2-tailed)
North America	230	14.77	134	11.66	3.113	1.558	0.120
Europe	118	6.66	99	10.28	−3.622	−2.173	0.031
Rest of the world	22	4.91	19	7.11	−2.196	−1.176	0.247

Note: Results of an independent t-test that compares the average number of transactions in the target company industry between lead acquirers and syndicate partners, split by the region of the syndicate partner. We exclude acquirers without acquisition track records and correct for outliers by omitting observations with a number of previous acquisitions three times the standard deviation above or below the mean.

acquirers (41.1 percent of the transactions). This makes European (American) lead acquirers less (more) likely to look for complementary country-specific knowledge in a syndicate partner. Second, European acquirers engage in cross-border transactions closer to home than do North American acquirers (Cornelius et al., 2007). The need for country-specific knowledge is arguably most important for North American acquirers that engage in transatlantic buyouts, to facilitate and effectuate the postbuyout monitoring function, as argued by Sorenson and Stuart (2001).

The third hypothesis builds on the notion that target companies that are active in a wide range of industries are more likely to be bought by hybrid syndicates. Table 7.6A provides no support for hypothesis 3. Hybrid syndicates are not associated with the buyouts of highly diversified target companies. However, Table 7.6B reports that private equity firms are more likely than strategic acquirers to be invited as syndicate partners for the acquisitions of more diversified companies ($t = 3.392$, $p < 0.01$), although the differences are significant only for European acquirers ($t = 3.638$, $p < 0.01$).

The notion that corporate acquirers shun diversified target companies is in line with theories on synergies and the need for strategic fit (Jemison and Sitkin, 1986). The finding also corresponds with the ability of private equity firms to restructure highly diversified target companies, apply a strict strategy focus (Bruining and Wright, 2002), and offer private equity firms the possibility of selling off noncore assets of target companies to generate additional cash.

The fourth hypothesis relates the exit potential of an investment with the type of syndicate partner that is invited to syndicate. The hypothesis postulates that limited exit potential induces private equity firms to syndicate buyouts to

Table 7.6A Number of Different Industries in Which Target Company Is Active per Syndicate Type

Syndicate Type		N	Mean	Std. Dev.	
Private equity syndicate		191	2.63	2.027	
Corporate acquirer syndicate		32	2.09	1.058	
Hybrid syndicate		71	2.56	2.041	
Total		294	3.56	1.95	
	Sum of Squares	**df**	**Mean Square**	**F-value**	**Sig.**
Between Groups	7.988	2	3.994	1.05	0.351
Within Groups	1106.529	291	3.803		
Total	1114.517	293			

Note: Results of a one-way analysis of variance (ANOVA) that compares the mean number of different industries in which target companies are active per syndicate type. We corrected for outliers by omitting observations with a number of industries three times the standard deviation above or below the mean.

Table 7.6B Difference in Number of Different Industries of Target Companies per Syndicate Partner Type

	Syndicate partner is private equity firm		Syndicate partner is corporate acquirer				
	N	Mean	N	Mean	Mean Difference	t-value	Sig. (2-tailed)
Overall	404	2.7	87	2.01	0.684	3.362	0.001
North America	240	2.87	38	2.58	0.292	0.816	0.415
Europe	142	2.42	41	1.56	0.862	3.638	0.000
Rest of the world	22	2.55	8	1.62	0.920	1.359	0.185

Note: Results of an independent t-test that compares mean number of different industries in which target companies are active per syndicate partner type. We corrected for outliers by omitting observations with a number of industries three times the standard deviation above or below the mean.

corporate acquirers. The hypothesis is conditional on private equity firms being the lead acquirers, since the need for a syndicate partner that can act as an exit trade partner is more relevant for private equity firms and less relevant for corporate lead acquirers. Table 7.7 reveals significant differences for one exit proxy for companies acquired in North America (H4c) and two proxies for companies acquired in Europe (H4b and H4d). Note that the geographical comparison for this hypothesis is on the primary country of the target company and not on the origin of the acquirer, as in hypotheses 1 to 3. The exit proxy data are for the year in which the transactions take place. Additional unreported tests confirm the findings if the proxies are the three- and five-year averages in the years prior to the transaction.

To test hypothesis H4a we collected data on the number of M&A transactions in the industry of the target company. The results do not indicate significant differences at a 5 percent level of significance. Hypothesis 4b measures country-level M&A activity. The results indicate that private equity firms are invited as syndicate partners in countries with high levels of M&A activity, whereas corporate acquirers are chosen as syndicate partners in countries where M&A transactions are in short supply ($t = 2.427$, $p < 0.05$). The findings hold only for target companies in Europe ($t = 3.274$, $p < 0.05$). The other two proxies focus on the IPO exit route, via the number of IPOs (H4c) and development level of the stock market (H4d) measured by dividing the target country's stock market capitalization by its GDP. Similar data on the industry level are not at hand. The findings for hypothesis 4c indicate that corporate acquirers, rather than private equity firms, are asked as syndicate partner for transactions in countries that show relatively low IPO activity ($t = 2.614$, $p < 0.05$). However, the results are significant only for

Table 7.7 Difference in Exit Potential per Syndicate Partner Type

		Syndicate partner is private equity firm		Syndicate partner is corporate acquirer				
Hypothesis	Target Company Region	N	Mean	N	Mean	Mean Difference	t-value	Sig. (2-tailed)
H4a								
Proxy: M&A Activity in Primary Industry of Target Companies								
	- North America	224	3186.39	44	2564.30	622.10	1.687	0.096
	- Europe	183	4077.23	44	5029.32	−952.09	−1.854	0.065
H4b								
Proxy: M&A Activity in Primary Country of Target Companies								
	- North America	224	7573.03	44	6612.11	960.92	1.875	0.066
	- Europe	183	1410.32	44	904.91	505.41	3.274	0.010
H4c								
Proxy: IPO Activity in Primary Country of Target Companies								
	- North America	224	1311.08	44	1074.23	236.85	2.855	0.006
	- Europe	183	121.77	44	90.45	31.31	1.100	0.272
H4d								
Proxy: Level of Stock Market Development in Primary Country of Target Companies								
	- North America	222	137.39	38	139.63	−2.154	−0.692	0.489
	- Europe	174	101.68	42	90.55	16.228	2.539	0.012

Note: Results of independent t-tests that compare means of the exit potential per syndicate partner type. The proxies used to test H4a, H4b, and H4c measure the number of acquisitions/IPOs from the beginning until the end of the year in which the acquisition took place. The level of stock market development in the year of the acquisition is used to test H4d. Data are taken from WDI Online. We corrected the level of stock market development for outliers by omitting observations with values three times the standard deviation above or below the mean. Results are conditional on the lead acquirer being a private equity firm.

targets in North America ($t = 3.542$, $p < 0.01$) and not in Europe. The findings for hypothesis 4d provide similar results; corporate acquirers rather than private equity firms are asked to be syndicate partners for transactions in countries that show relatively weaker developed stock markets ($t = 2.855$, $p < 0.05$). For H4d the differences are significant for target companies in Europe ($t = 2.539$, $p < 0.05$) and not in North America.

Conclusion

This study shows that private equity firms invite syndicate partners with financial resources that match the buyout's financing requirements. The data reveal contrasting patterns when it comes to the complementary knowledge hypotheses. European lead acquirers invite syndicate partners with a lesser track record in the target company's industry and country. Conversely, North American leads invite syndicate partners with a stronger track record than their own, although the difference is significant only at the country level. Corporate acquirers are invited as syndicate partners to acquire less diversified companies. However, the study finds no empirical support for the hypothesis that corporate acquirers and private equity firms combine in hybrid syndicates to split highly diversified target companies. Finally, in Europe corporate acquirers are invited as syndicate partners for buyouts in countries with relatively low M&A activity and underdeveloped stock markets.

Additional research is needed to further explain the syndicate partner selection process. The data set includes seventy-one transactions in which corporate acquirers and private equity firms jointly buy out a company. This study provides and tests two hypotheses that specifically account for buy-side cooperation between corporate acquirers and private equity firms. Future research might shed light on additional reasons for corporate acquirers to forge syndicates. For example, corporate acquirers might invite private equity firms to jointly develop and restructure target companies prior to integrating the targets into the corporate acquirers' organizations.

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CHAPTER 8

INDUSTRY CONCENTRATION, SYNDICATION NETWORKS, AND COMPETITION IN THE U.K. PRIVATE EQUITY MARKET FOR MANAGEMENT BUYOUTS

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The private equity (PE) market has grown dramatically over the past twenty years both in the United States and in Europe (Bottazzi and Da Rin, 2002; Gompers and Lerner, 2001). The PE market, broadly defined, is an important source of funds for start-up firms, private middle-market firms, firms in financial distress, and firms seeking buyout financing. One important aspect of the PE market that has received little attention is how the competitive environment impacts the activities of PE investors. Inderst and Mueller (2004) theoretically show how changes in

demand and supply conditions in the venture capital market affect the screening, valuation, and value-adding by venture capital firms. Further, previous research has indicated that the total amount of venture capital raised has a positive impact on the valuation of venture capital–backed companies (Gompers and Lerner, 2000; Ljungqvist and Richardson, 2003). Ljungqvist and Richardson look more deeply into the investment behavior of PE firms, such as the timing of exits and how this is affected by the competitive environment. Last, Hochberg et al. (2010) document that companies seeking venture capital raise money on worse terms in more densely networked markets, and that increased entry into a market is associated with companies receiving increased valuations These studies, however, mainly focus on the impact of shifting demand and supply conditions on different aspects of PE investing. One important element of the competitive environment that has been largely neglected is the impact of industry concentration. This is not trivial, as figures from the U.S. venture capital industry suggest that there is substantial market concentration in certain segments of the U.S. venture capital market (Anand and Galetovic, 2000).

A second important aspect of the PE market is that investors often invest through investment syndicates. An equity syndicate involves two or more PE firms taking an equity stake in a portfolio company for a joint payoff. The literature on PE syndication outlines several motives for syndication, such as window dressing, portfolio diversification, improved screening, enhanced value-adding, and deal flow generation (Lerner, 1994; Cumming, 2006). Syndication, however, decreases the extent of competition by limiting the number of new entrants into the venture capital industry (Hochberg et al., 2010). Except for Hochberg et al., who study the impact of syndication networks in the early-stage venture capital market in the United States, few studies have examined the effect of syndication networks on the extent of competition in the PE market. This aspect is assuming considerable importance in the context of the U.S. Department of Justice expressing concerns about the effects of possible collusion on pricing in PE deals.

The goal of this chapter is thus twofold. First, we explore whether the extent of industry concentration in the market for PE has an impact on the prices they have to pay to acquire investment targets. Previous studies that have looked at the impact of competition on the price PE investors pay to acquire companies have ignored the effect of industry concentration (Gompers and Lerner, 2000; Ljungqvist and Richardson, 2003). Industry concentration is one of the most important measures of industry structure and has received substantial attention in the banking literature (Berger and Hannan, 1989; Bikker and Haaf, 2002). Second, interfirm cooperation might be used to limit the extent of competition (Brueckner and Whalen, 2000; Hochberg et al., 2010). We examine therefore whether interfirm cooperation through syndication in the PE market reduces the extent of competition and, in turn, affects the prices PE firms are willing to pay to acquire buyout targets.

We test our hypotheses by studying the price PE investors paid to acquire buyout targets in the United Kingdom during the period 1993–2002. The U.K. PE

market, which is the second largest worldwide, has grown substantially during this period and saw the entrance of numerous new investors. We construct a unique data set involving data from (1) the state of the overall PE market, (2) the PE firms active in this market, and (3) the deals that these PE firms are involved in. We use both an absolute measure and a relative measure to assess the price PE firms pay to acquire buyout firms.

By studying the effect of industry concentration and interfirm cooperation through syndication on the extent of competition in the PE market, we contribute to the existing literature in at least three important ways. First, a central question in the financial literature is whether the valuation of firms is affected by exogenous shifts in the demand for securities. Traditional corporate finance theory predicts that the intrinsic value of a firm is driven by the potential to generate future cash flows (Kaplan and Ruback, 1995). This implies that demand curves for financial securities should be flat. There is evidence, however, that demand shifts drive the valuation of early-stage and later-stage investments (Gompers and Lerner, 2000; Ljungqvist and Richardson, 2003). We contribute to this stream of literature by highlighting one important structural characteristic in the supply of finance—industry concentration—and how this impacts the price of firms. Second, whereas financial markets are generally depicted as being perfectly competitive, imperfect competition has been documented for investment banking and deal-making activity (Chen and Ritter, 2000; Christie and Schultz, 1994). By focusing on the distinctive context of later-stage PE, we provide another example of imperfect competition in financial markets. Third, recent studies in the financial literature have stressed the role of interfirm networks through syndication for private debt placements, investment banking, and venture capital investing (Corwin and Schultz, 2005; Hochberg et al., 2007; Sang and Mullineaux, 2004). Our study adds to this literature by examining whether interfirm networks in the later-stage PE market reduce the extent of competition present in that market.

First, we present previous research and our hypotheses. Then we outline the empirical setting and the data and methods used in the analyses. Following that we present the results from the empirical analyses. Finally, we discuss our findings, conclude, and outline potential avenues for future research.

Prior Research and Hypotheses

Firm Valuation and Competition in the PE Market

Finance theory predicts that the value of a firm should be equal to the discounted cash flow of its expected future cash flows (Kaplan and Ruback, 1995). Therefore

the movement in prices should be driven by changes in the growth prospects of the future cash flows or changes in the riskiness of these cash flows. This implies that demand curves for financial securities should be flat. Some studies, however, have found that demand curves for stocks slope downward; that is, the higher the demand for a security, the higher the price (Kaul et al., 2000; Shleifer, 1986). Most of these studies focus on the valuation of public securities. Only a few studies have looked at the effect of demand shifts on asset prices in the private market. By studying the pre-money valuation of venture-backed companies in the United States during the period 1987–1995, Gompers and Lerner (2000) show how increases in the inflow of funds have a positive impact on the valuation of venture capital–backed companies. Kaplan and Stein (1993) also provide some evidence that too much capital inflow in the leveraged buyout market at the end of the 1980s led to higher transaction values. There is also some indirect evidence indicating that demand and supply shifts impact the prices investors pay to acquire investment targets. For example, Ljungqvist and Richardson (2003) show for early-stage venture capital and later-stage buyout investments that greater competition as measured by the size of funds available for investments leads to lower returns. These results are supported by Kaplan and Schoar (2005), who show that market entry leads to lower returns in the PE market. It is not clear from these results, however, whether lower returns are mainly driven by higher prices at the time of the investment or lower prices at the time of exit.

There are several reasons industry concentration in the PE market will have a nontrivial impact on a PE firm's return requirement. First, Porter (1980) argues that highly fragmented industries lead to a greater degree of competitive rivalry among firms, resulting in lower prices. In concentrated industries, firms can use their market power to set prices above competitive levels, resulting in abnormal returns. Numerous studies find a positive relationship between market concentration and profits, suggesting that concentrated markets give firms market power to set prices at a noncompetitive level. For example, several studies have investigated the impact of industry concentration in commercial banking markets and have found support for this argument (Berger and Hannan, 1989; Bikker and Haaf, 2002; Calem and Carlino, 1991). Second, anecdotal evidence from the U.K. buyout market suggests wealth gains following buyouts involve a mix of both real increases in efficiency and short-term gains arising from underpricing (Wright et al., 2000). One plausible explanation for this underpricing is the lack of competition for certain deals.

Overall this discussion suggests that higher levels of market concentration will decrease the intensity of competition in the market for PE and hence will lead to lower prices to acquire investment targets. Therefore we hypothesize:

Hypothesis 1. The higher the industry concentration in the market for PE, the lower the prices associated with investment targets.

Not all firms are able to benefit from imperfect competition as a result of market concentration. According to the relative-market-power hypothesis, only firms with large market shares are able to exercise market power and earn supernormal returns (Shepherd, 1982). As a consequence only those PE firms with large market shares should be able to exercise market power. Therefore we hypothesize:

Hypothesis 2. The higher the market share of a PE firm, the lower the prices associated with investment targets.

Firm Valuation and Syndication Networks between PE Firms

An important feature of the PE market is that firms often syndicate their investments. There are several reasons PE firms syndicate: portfolio diversification, improved screening, selection and value adding, deal flow generation (Lerner, 1994; Manigart et al., 2006), and reducing agency conflicts (Admati and Pfleiderer, 1994). One important consequence of syndication is that it leads to extensive interfirm networks between PE firms (Hochberg et al., 2007).

Brander et al. (2002) suggest that the interfirm networks created through syndication might decrease competition in the PE market as firms cooperate in order to invest. Taking the networks of interfirm cooperation into account when studying competition, therefore, allows a more refined understanding of the effects of industry structure. In this study we look at one particular aspect of network structure: network density. "Network density" refers to the ratio of realized ties between firms present in a network compared with the total number of ties if each network member were tied to every other member. We expect that a higher level of network density in the PE market will reduce the extent of competitive rivalry between PE firms. As network density increases, communication across firms becomes more efficient and information exchange will be facilitated, making tacit collusion when bidding for deals more likely. It will be easier to collude in an industry in which the different players are connected in a dense network of interfirm ties than in one in which they are disconnected (Scherer and Ross, 1990). For example, Podolny (1993) shows how the ties among the top-tier investment banks sustain the high return characteristics of that industry. Further, Hochberg et al. (2010) find that the extent of networking through syndication in the U.S. venture capital (VC) market reduces the number of new entrants and hence lowers the prices VC investors need to pay to invest.

Therefore we expect that higher network density may lead to collusion and hence affect the prices PE investors need to pay to acquire targets:

Hypothesis 3. The higher the network density in the market for PE, the lower the prices associated with investment targets.

Data and Methods

Empirical Setting: The U.K. PE Market for Management Buyouts

The impact of industry concentration and syndication networks on the prices paid to acquire investment targets is empirically examined in the context of PE investing in the U.K. buyout market during the period 1993–2002. Buyouts involve a variety of closely related ownership forms in which a group of individuals together with PE investors acquire ownership of an enterprise (Kaplan, 1989; Wright et al., 2000). Whereas most previous studies have examined the early-stage venture capital market, our study contributes to the literature on PE by examining later-stage buyout investment. In many countries the later-stage management buyout market accounts for the vast bulk of PE activity. The U.K. PE market is the largest and most dynamic in Europe, accounting for some 52 percent of the whole European PE market in 2004, and is second in size globally only to the U.S. PE market. PE investors play a major role in funding buyouts. In the United Kingdom, for example, the vast majority of buyouts with a transaction value above £10 million involve PE funding (CMBOR, 2006).

Data

The data for our analyses are obtained from three major sources. First, buyout deals are identified through a hand-collected database maintained by the Centre for Management Buyout Research (CMBOR). Most important, a semiannual survey is conducted with organizations such as banks and PE companies investing in buyouts. This data collection method enables private information on full details of individual financing structures to be obtained. We include transactions that occurred between 1993 and 2002. Second, as CMBOR collects only transaction-specific data, complementary data on the state of the overall PE market was gathered through the yearbooks issued by the European Private Equity & Venture Capital Association (EVCA). Third, in order to control for stock market conditions, we also rely on data provided by Worldscope and Datastream.

Dependent Variables

We use two dependent variables. First, we use the log of the transaction value, that is, enterprise value. Second, as the first variable may also be a measure of size, we use transaction value to earnings before interest and taxes (EBIT) as a relative price

measure (Kaplan and Ruback, 1995). Both these measures are obtained from the CMBOR database. EBIT is measured in the year before the transaction. Kaplan and Ruback (1995) use earnings before interest, taxes, depreciation, and amortization (EBITDA) instead of EBIT. However, in the U.K. PE market, EBIT is a commonly used measure. We exclude observations with a negative EBIT because the transaction-value-to-EBIT ratio is meaningless in that case. Additionally we drop those observations that fall in the smallest 1 percentile or largest 1 percentile of the transaction-value-to-EBIT distribution as some of these figures are unrealistically high or low.

Independent Variables

In order to measure industry concentration, we use the traditional CR4 and Herfindahl-Hirschman (HH) concentration ratios. Since PE firms have different minimum and maximum investment preferences, the market is segmented. Concentration levels therefore must be examined at different value ranges of the market. We distinguish between four different segments in the PE market: transactions with a total deal value of £0–10 million, £10–25 million, and £25–100 million and transactions with a value higher than £100 million. In order to calculate the market share of each PE firm in each of the four market segments, we use one of the measures used by Anand and Galetovic (2000). We calculate the fraction of all deals in a given value range and year in which each PE firm was involved.[1]

The CR4 index gives the combined market share of the four largest firms in each value segment of the PE market. The HH index equals the sum of the squared market shares of all the firms active in a particular value segment. This index conveys more information than the CR4 concentration ratio. Our measures for industry concentration included in the analyses are lagged with one year in order to avoid potential problems of endogeneity.[2]

Similar to Hochberg et al. (2010), network density is calculated as the ratio of the number of relationships that exist between players active in the PE market, compared with the total number of possible relationships if each PE firm were tied to every other PE firm. We calculate network density for each of the four value segments as previously described. The relationships in our empirical setting are measured by looking at PE syndicates that PE firms were previously involved in. Two PE players have a relationship if they were jointly involved in a PE syndicate. We count only the number of relations the lead investor has with different nonlead members of a syndicate. The relations between nonlead investors are not included, as nonlead investors mainly interact with the lead investor (Wright and Lockett, 2003). A five-year moving window is used to calculate this variable. The length of this window is chosen based on the average life span of a syndicate relationship.[3] The higher this density variable, the higher the connectedness between firms in the PE community. This variable is lagged one year.

We include different control variables in the regressions. First, in order to control for the size of the company, regressions include the firm's turnover (turnover) and the number of employees (employees). Further, we add a dummy indicating whether the firm was profitable, in terms of EBIT, at the time of the buyout (profit dummy). Profitable firms are likely to be traded at higher prices. We also include the total amount of senior debt as a percentage of the total financing used to acquire the buyout target (leverage). The availability of debt financing might have a positive impact on the price PE firms can pay to acquire a buyout target (Kaplan and Stein, 1993). Further, we include the absolute amount invested by the management (amount invested management). A substantial investment by the management might provide a positive signal to outside investors, thereby increasing their willingness to pay a higher price (Kaplan, 1989). A dummy is also used to indicate whether the vendor of the buyout firm retained a financing stake in the buyout target. This might provide a credible signal and hence positively impact the price PE firms are willing to pay (vendor dummy). We also include a dummy variable to indicate firms in technology-intensive industries since growth options might have a positive impact on the valuation of these firms (technology dummy).

Different dummies are included that indicate the type, vendor source, and geographical region of the buyout transaction. We distinguish between four different types of buyouts: buyouts (buyout dummy), buyins (buyin dummy), a combination of a buyout and a buyin (bimbo dummy), and investor-led buyouts (ibo dummy). The buyout dummy is the reference category. With respect to the vendor source of the buyout transaction, we include dummies for buyouts following a bankruptcy (known as receivership in the U.K. system; receivership dummy), buyouts resulting from a divestment (divestment dummy), and secondary buyouts (secondary buyout dummy). Further, we include different dummies for the region where the buyout company is located. We distinguish between thirteen different geographical regions in the United Kingdom.

We add a variable that captures the efficiency of the lead PE investor backing the deal. According to the efficient-structure hypothesis, differences in firm-specific efficiencies within markets create unequal market shares and hence lead to higher levels of concentration, yielding a positive profit-concentration relationship (Demsetz, 1973; Peltzman, 1977). In order to control for this, we include the number of IPOs backed by the lead investor during the five years preceding the investment. This is a measure of the performance, or previous success, of a PE firm (Hochberg et al., 2010). More efficient firms should be able to add more value, and hence the price they are willing to pay should be higher. We also add the total size of the funds managed by the PE firms as previous research has indicated a positive relation between VC fund size and firm valuation (Cumming and Dai, 2009).

Additionally we control for the total inflow of funds in the industry as this might positively impact deal values (Gompers and Lerner, 2000). Therefore we measure the total funds raised for buyout investments in the year preceding the buyout transaction (funds raised buyouts). The EVCA yearbook has detailed information

only on the total funds raised in the United Kingdom for buyout transactions from 1998 onward. For the period 1993–1997, we estimate the funds that will be allocated to buyout investments by multiplying the total PE funds raised by the percentage that was actually invested in buyouts in the years the funds were raised. These figures are inflation-adjusted to control for nominal price increases. We also measure the number of players active in each value segment of the PE market (# investors). The more players that are active, the more intense will be competition and the higher the prices will be. This variable is lagged one year.

Finally, in order to control for general industry conditions such as growth prospects and the extent of competition in the industry of the buyout firm, we include an estimate of the total enterprise value of each firm in the regressions using total enterprise value as a dependent variable (estimated firm value). The enterprise value is estimated by multiplying the earnings before interest and taxes by the average price-earnings ratio for U.K. firms quoted on the London Stock Exchange and that were active in the same 2 digit SIC industry.[4] We combine data from Worldscope and Datastream in order to calculate this variable. The stock market data used are measured at the end of June in the year of the buyout transaction. When using price earnings as a dependent variable, we include the average price earnings from firms active in the same 2 digit SIC industry (estimated price earnings).

Analytical Procedure

We use two different approaches to study the impact of industry concentration and network density on the price PE firms pay to acquire buyout targets. First, similar to Gompers and Lerner (2000), we employ a hedonic regression approach. The transaction value is the dependent variable, and the characteristics of the firm and the economic environment are the independent variables. The transaction value is the total enterprise value, including both equity and debt arrangements. An important assumption of hedonic pricing models is that most of the important factors for determining the price of the firm are included in the model since omitted variables may introduce biases that lead to mistaken interpretations of the results. To minimize the potential problem of omitted variables, we introduce an extensive set of control variables in each of the analyses. We employ an ordinary least square specification using a "log-log" framework to estimate our model. In the log-log framework, the logarithm of the valuation is regressed on the dummy variables and the logarithms of the continuous, nonnegative variables. The log-log specification assumes a more reasonable multiplicative error structure. To reduce potential endogeneity issues we also lag a number of independent variables, as noted above. The model estimated is presented in equation 1:

$$\text{Log transaction value} = f(\text{log industry concentration, log market share, log network density, control variables}) \quad (1)$$

One problem with equation 1 is that it regresses measures of size on size, and hence r-squares might be artificially high. Therefore we also use EBIT as a relative price measure as a dependent variable (Kaplan and Ruback, 1995). Again, we use an ordinary least square specification using a log-log framework to estimate this model. Equation 2 presents the estimated model:

$$\text{Log (transaction value/EBIT)} = f(\text{log industry concentration, log market share, log network density, control variables}) \quad (2)$$

Descriptive Statistics

Table 8.1 provides summary statistics for our industry concentration variables. The CR4 concentration ratio shows that the PE market is highly concentrated in certain years. Further, these figures tend to fluctuate considerably from year to year. The HH concentration index is significantly smaller. Again, this measure fluctuates greatly. There are substantial differences between the concentration ratios of the different value ranges. In general, concentration ratios are smaller for the upper end of the market and tend to decrease toward the end of the observation period. The industry concentration ratio was most stable in the £25 million to £100 million size class. In the first years of the observation period, the largest four players frequently cover more than 50 percent of the total market.

Table 8.1 Industry Concentration in the U.K. PE Market

	Herfindahl-Hirschman				CR4			
Value Range[a]	0–10	10–25	25–100	>100	0–10	10–25	25–100	>100
1993	0.17	0.05	0.04	0.07	0.55	0.37	0.25	0.40
1994	0.19	0.09	0.06	0.33	0.57	0.46	0.36	1.00
1995	0.19	0.12	0.06	0.06	0.57	0.51	0.38	0.32
1996	0.15	0.15	0.08	0.05	0.48	0.56	0.47	0.28
1997	0.20	0.20	0.07	0.07	0.56	0.60	0.40	0.43
1998	0.14	0.11	0.07	0.05	0.53	0.48	0.45	0.28
1999	0.03	0.13	0.07	0.05	0.28	0.50	0.43	0.33
2000	0.05	0.06	0.07	0.03	0.34	0.38	0.37	0.23
2001	0.03	0.06	0.04	0.05	0.27	0.40	0.29	0.27
2002	0.03	0.05	0.06	0.04	0.24	0.29	0.36	0.27

[a] The amounts are expressed in £1,000 and are inflation-adjusted with base year 1992.

Table 8.2 describes our network density measure and gives some additional information concerning the total number of investors and investments in each year. In the early 1990s network density decreases a little bit but starts to increase again and reaches a peak in 1997. In the highest value segment, this peak is reached in 1995. After 1997 network density drops considerably. We clearly see that more investors are active in the lower value segment. It is therefore surprising that concentration levels are relatively high for this segment. Generally speaking, the number of investors who are actively doing deals fluctuates from year to year and shows a small increase around 1999 but decreases again from 2000 onward. The total yearly number of investments rises from year to year and reaches a first peak in 1997. When we look at the expected amount of PE funds available to be targeted at buyout transactions, we can observe large fluctuations in the expected amount of funding available for buyout transaction. The large inflow of funds in 1998 has clearly decreased the concentration ratio in the largest size class. The amount of funding available reached a first peak in 1995, followed by another peak in 1999. A record year was reached in 2002.

There are missing values for some of the control variables used in the valuation analyses; those relating to financial measures at the deal level are not always available for reasons of confidentiality. We adopt the traditional method of dealing with missing values by applying complete case analysis.[5] After deleting observations with missing data, we have a final sample of 934 PE-backed buyout transactions in which eighty different PE firms participated. The remaining sample is not a completely random subset of the full data set. Even though there is no significant difference in terms of the average value of deals, t-tests indicate that buyout firms included in the analyses have a significant smaller turnover (mean = £28.44 million versus mean population £46.30 million).[6] Further, the leverage of the deals included in the analyses is a little lower compared to the population (mean = 43.30 percent versus mean population = 45.07 percent).

The summary statistics for the investments and the PE firms included in the analyses are shown in Table 8.3. The average transaction value of a deal is a little higher than £28 million, with a huge range of values as indicated by the large standard deviation. Note that transaction values are inflation-adjusted with base year 1992. The largest deal is worth £1,819 million, whereas the smallest deal is worth only £90,000. The average price-earnings ratio equals 8.75. Almost 95 percent of the firms were profitable at the time of the buyout. The average buyout firm has a turnover of more than £34 million and employs 470 people. The average leverage of the deals included in the analyses is 43.30 percent. The management invested on average £670,000. Around 25 percent of the deals received funding from the vendor. More than 20 percent of our companies are active in technology-related domains. About 60 percent of the transactions are buyouts, 20 percent are buyins, 10 percent are a combination of a buyout and a buyin, and almost 11 percent are investor-led buyouts. The major source of buyout activity is divestments (47.6 percent), followed by buyouts from private and family businesses (39 percent). Secondary buyouts (7.4 percent) and buyouts resulting from receiverships (2.6 percent) account for

Table 8.2 Competition in the U.K. PE Market

	Network Density				# Investors Active				# Investments				
Value Range[a]	0–10	10–25	25–100	>100	0–10	10–25	25–100	>100	0–1	10–25	25–100	>100	PE Raised t-1[a]
1993	0.032	0.041	0.052	0.046	52	31	32	16	153	27	24	7	575072
1994	0.023	0.042	0.048	0.044	51	30	28	3	225	48	35	1	588887
1995	0.024	0.042	0.052	0.076	54	35	30	22	250	51	41	14	1858546
1996	0.027	0.049	0.058	0.071	62	33	26	21	284	66	45	12	997410
1997	0.030	0.050	0.061	0.055	56	28	25	18	279	68	70	21	1981070
1998	0.025	0.037	0.057	0.039	51	28	33	30	188	67	67	32	4891826
1999	0.023	0.036	0.052	0.035	71	30	44	27	179	74	81	31	4711517
2000	0.021	0.021	0.041	0.037	76	29	39	43	136	57	57	42	3570165
2001	0.015	0.014	0.031	0.030	61	33	37	28	107	56	48	25	6426567
2002	0.010	0.008	0.031	0.022	55	27	28	28	84	44	35	24	7547906

[a] The amounts are expressed in £1,000 and are inflation-adjusted with base year 1992.

Table 8.3 Characteristics of the Buyout Transactions and PE Firms in the Sample

	N	Mean	S. D.	Min.	Max.
Transaction value[ac]	934	28.44	92.27	0.09	1819.30
Price-earnings multiple[b]	813	8.75	4.38	3.00	26.43
EBIT[ac]	934	4.60	28.48	−78	905
Profit dummy (%)	934	94.78			
Turnover[ac]	934	34.55	90.72	0.03	1565.33
# of employees	934	469.92	1236.34	7	27300
Leverage (%)	934	43.30	18.97	0	0.95
Amount invested management[ac]	934	0.67	3.28	0	82.18
Vendor dummy (%)	934	25.99			
Technology dummy (%)	934	21.33			
Buyout dummy (%)	934	59.92			
Buyin dummy (%)	934	19.71			
Bimbo dummy (%)	934	9.60			
Ibo dummy (%)	934	10.64			
Receivership dummy (%)	934	2.61			
Divestment dummy (%)	934	47.58			
Private buyout dummy (%)	934	39.03			
Secondary buyout dummy (%)	934	7.44			
Funds managed lead[a]	934	1132.31	1586.08	0.78	10577
# IPOs lead	934	3.13	4.06	0	14
Funds raised buyouts[a]	934	2652887	2036437	575071.6	7547906
Price-earnings 2 digit SIC	934	11.62	3.81	3.68	37.66

[a] The amounts are expressed in £ million.

[b] In order to calculate the average price earnings, we excluded firms with negative earnings, as price earnings is meaningless in such case. We further drop observations that fall in the smallest 1 percentile or the largest 1 percentile of the price-earnings distribution. We end up with 813 observations.

[c] These figures are inflation-adjusted with base year 1992.

only a small part of overall buyout activity. The average size of the funds managed by a PE firm is £1,132 million, with a substantial amount of variation as indicated by the high standard deviation. The average price earnings for public companies in the same 2 digit SIC industry equals 11.62. This figure is considerably higher than the average price earnings of buyout transactions.

The correlation matrix for the variables used in the analyses is shown in Table 8.4. The HH concentration index is highly correlated with the CR4 concentration index. Therefore we do not include them in the same regression. Our market share variable is highly correlated with the number of IPOs a lead investor was involved in and the total amounts of funds managed by the lead PE firm. We used several specifications including and excluding these correlated variables, but the results stay the same. Variance inflation scores indicate no problems of multicollinearity. The correlations between all the other independent variables used in the regression analyses are below 0.70 and therefore should not pose multicollinearity problems.[7]

Results

In Table 8.5 we present ordinary least squares (OLS) estimates for the effect of industry concentration on the price PE firms pay to acquire buyout targets. The standard errors reported are based on White's (1980) method in order to correct for heteroskedasticity. In the first three models the dependent variable equals the log of the transaction value. All these models are highly significant and have large r-squares. Model 1, including the control variables, shows that larger firms are associated with higher valuations. Highly leveraged transactions and transactions in which the management invests a substantial amount receive significantly higher valuations. Vendor financing has a significant positive impact on the valuation of buyout targets. Additionally, while investor-led buyouts are associated with higher valuations, buyouts following a bankruptcy (receivership) receive significantly lower valuations. The total amount of funds managed by the lead PE firm has a positive impact on the valuation, whereas the number of IPOs has a negative impact. The total amount of funds raised for buyout transactions in the PE industry has a significant positive impact on the valuation of buyout deals. Surprisingly the coefficient of the number of investors active in a given year is negative and highly significant across all our models. Our estimated firm value variable is also significantly and positively associated with the value of the buyout target, as expected.

In model 2 we introduce the effect of industry concentration as measured by the HH concentration index. The coefficient of the HH concentration index is highly significant and has the expected sign. Higher concentration values are associated with lower transaction values. Our market share variable has the expected sign and is highly significant. Our network density variable is significantly positive, contrary to expectations. In general the signs of our control variables remain unchanged. The impact of the total amounts of funds raised in the PE industry is

Table 8.4 Correlation Matrix of Key Variables

Correlation Matrix[a]																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Log value	1.00															
2. Log price earnings multiple	0.33*	1.00														
3. Log HH	−0.50*	−0.15*	1.00													
4. Log CR4	−0.36*	−0.08*	0.93*	1.00												
5. Log market share	−0.11*	0.06	0.30*	0.30*	1.00											
6. Log network density	0.49*	0.12*	0.08*	0.19*	0.05*	1.00										
7. Log turnover	0.78*	0.14*	−0.41*	−0.31*	−0.09*	0.41*	1									
8. Log employees	0.72*	0.18*	−0.32*	−0.23*	−0.05	0.41*	0.78*	1								
9. Log leverage	0.26*	0.07*	−0.19*	−0.15*	0.06*	0.05	0.19*	0.21*	1							
10. Log amount invested management	0.33*	0.12*	−0.22*	−0.17*	−0.08*	0.14*	0.26*	0.19*	−0.02	1						
11. Log funds managed lead	0.36*	0.21*	−0.02	0.05	0.68*	0.23*	0.30*	0.28*	0.18*	0.07*	1					
12. Log # IPOs lead	0.08*	0.11*	0.22*	0.25*	0.74*	0.25*	0.06*	0.08*	0.09*	−0.04	0.78*	1				
13. Log funds raised buyouts	0.21*	0.12*	−0.53*	−0.50*	−0.13*	−0.32*	0.10*	0.05	0.18*	0.14*	0.04	−0.03	1			
14. Log # investors	−0.72*	−0.26*	0.24*	0.04	0.04	−0.54*	−0.57*	−0.53*	−0.15*	−0.22*	−0.26*	−0.10*	−0.04	1		
15. Log estimated price earnings	−0.09*	−0.01	0.33*	0.32*	0.11*	0.21*	−0.03	−0.01	−0.06*	−0.04	0.02	0.10*	−0.37*	−0.00	1	
16. Log estimated firm value	0.34*	−0.07*	−0.03	0.01	−0.03	0.36*	0.31*	0.29*	0.10*	0.10*	0.11*	0.09*	−0.15*	−0.30*	0.64*	1

[a] (N = 934).

*$p < 0.05$.

Table 8.5 OLS Regression Using Robust Standard Errors[a]

	Dependent variable equals log transaction value						Dependent variable equals log price earnings multiple					
Variables	**Model 1**		**Model 2**		**Model 3**		**Model 4**		**Model 5**		**Model 6**	
Log HH			−0.46***	0.07					−0.12*	0.06		
Log CR4					−0.91***						−0.23*	0.11
Log market share			−1.21***	0.30	−1.22***				−0.37	0.39	−0.37	0.39
Log network density			0.45***	0.07	0.47***				0.08	0.09	0.08	0.09
Control variables												
Log turnover	0.33***	0.05	0.26***	0.05	0.27***	0.05	−0.09*	0.03	−0.11**	0.03	−0.11**	0.03
Log employees	0.18***	0.04	0.16***	0.03	0.16***	0.03	0.09*	0.03	0.08*	0.03	0.08*	0.04
Profit dummy	0.10	0.08	0.07	0.07	0.08	0.08						
Log leverage	0.50*	0.19	0.48**	0.15	0.49**	0.16	0.16	0.19	0.15	0.19	0.15	0.19
Log amount invested management	0.16**	0.06	0.14**	0.04	0.15***	0.04	0.05	0.05	0.04	0.05	0.04	0.05
Vendor dummy	0.10*	0.04	0.10*	0.04	0.10**	0.04	0.15*	0.06	0.15*	0.06	0.15*	0.06
Technology dummy	0.03	0.08	−0.01	0.07	0.00	0.07	−0.02	0.06	−0.03	0.05	−0.03	0.06
Buy-in dummy	0.10†	0.05	0.11*	0.05	0.11*	0.05	0.03	0.06	0.04	0.05	0.04	0.05
Investor led buyout dummy	0.52***	0.10	0.38***	0.08	0.36***	0.08	−0.07	0.08	−0.11	0.08	−0.11	0.08
Bimbo dummy	0.11†	0.06	0.08	0.06	0.07	0.06	−0.02	0.09	−0.03	0.09	−0.03	0.09
Receivership dummy	−0.47***	0.09	−0.52***	0.10	−0.50***	0.09	−0.47***	0.11	−0.47***	0.11	−0.46***	0.11
Divestment dummy	0.04	0.05	0.00	0.05	0.00	0.05	−0.01	0.05	−0.02	0.05	−0.02	0.05

Secondary buyout dummy	0.15†	0.08	0.14*	0.07	0.14*	0.07	0.04	0.09	0.04	0.09	0.04	0.09
Log funds managed lead	0.17***	0.03	0.20***	0.03	0.20***	0.03	0.06*	0.02	0.07*	0.03	0.07*	0.03
Log # IPOs lead	−0.18**	0.05	−0.08	0.05	−0.09†	0.05	−0.01	0.04	0.03	0.05	0.03	0.05
Log funds raised buyouts	0.10**	0.03	0.04	0.03	0.06*	0.03	0.06*	0.03	0.04	0.03	0.05†	0.02
Log # investors	−1.27***	0.13	−1.00***	0.09	−1.13***	0.10	−0.40***	0.09	−0.34***	0.08	−0.38***	0.09
Log estimated price earnings							−0.15**	0.05	−0.16**	0.05	−0.16**	0.05
Log estimated firm value	0.17***	0.02	0.10***	0.02	0.10***	0.02						
Number of observations	934		934		934		813		813		813	
P-value of log likelihood test	*<0.0001*		*<0.0001*		*<0.0001*		<0.0001		<0.0001		<0.0001	
R-Square	0.82		0.84		0.85		0.14		0.15		0.15	

[a] The constant term and the dummies that indicate the region of the buyout are not reported here.

† p < 0.10, *p < 0.05, **p <0.01,***p < 0.001.

not significant anymore. In model 3 we use the CR4 concentration index in order to measure competition. The coefficient is highly significant and has the expected sign. Again, our network density variable is significantly positive. Overall these results indicate that higher levels of concentration are associated with lower prices of buyout firms supporting, hypothesis 1. We also find strong support for hypothesis 2. In contrast to hypothesis 3, we consistently find support that a higher level of network density is associated with higher prices.

In models 4 to 6 the dependent variable is the log of the price-earnings multiple. The number of observations drops to 813 as we lose firms with negative or missing price earnings. As we could not calculate the price-earnings multiple when firms had negative earnings, we did not include the profit dummy. All these models are highly significant. The r-square is substantially lower compared to the previous models, in which we used the total transaction value as a dependent variable. The main reason for this decrease is the use of a relative price measure. Model 4, including the control variables, shows that larger firms, as measured by the number of employees, are associated with higher price earnings. The total turnover has a significantly negative impact on the total price earnings. Vendor financing also has a positive impact on the valuation of buyout firms. Buyouts that emerge from firms in receivership receive significantly lower valuations. The total size of the funds managed by the lead PE firm has a positive impact on the price-earnings multiple. The more funds raised for buyout investments in the year preceding the transaction, the higher the price multiples associated with buyouts. Again, the more investors that are active in the market in a given year, the lower the price earnings. In model 5 we introduce the effect of industry concentration. The coefficient of the HH concentration ratio is negative, as expected, and highly significant. Our market share and network density measures are not significant. In model 6 we introduce the CR4 concentration ratio. The coefficient has the expected sign and is significant. Again, our market share and network density measures turn out not to be significant. Overall these models provide support for hypothesis 1.

Table 8.1 indicates that concentration levels decreased substantially from 1998 onward. Therefore we run separate analyses for the periods 1993–1997 and 1998–2002 in order to test whether our results apply to these different periods.[8] These analyses are shown in Table 8.6. Model 1 and model 2 show that our results apply to the period 1993–1997. The coefficient of the HH concentration index is significant in both models and has the expected sign. The effect of market share is also significantly negative in model 1. In model 1 we observe a negative effect from network density on the price investors pay to acquire buyout targets. This effect is marginally significant. In model 3 and model 4, in which the price of buyout targets in the period 1998–2002 is analyzed, the effect of industry concentration on the valuation of buyout targets is highly significant and negative, as expected. Further, in model 3 network density has a highly significant positive impact. These results indicate that the effect of industry concentration on the price investors pay to acquire targets is present in both periods. The effect of market share is present only in the period 1993–1997.

Table 8.6 OLS Regression Using Robust Standard Errors for Different Time Periods[a]

	1993–1997				1998–2002			
Dependent Variable	**Log Transaction Value**		**Log Price-Earnings Multiple**		**Log Transaction Value**		**Log Price-Earnings Multiple**	
Variables	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Log HH	−0.74***	0.15	−0.24*	0.10	−0.83***	0.07	−0.33***	0.08
Log market share	−1.63***	0.34	−0.31	0.52	−0.18	0.74	0.14	0.54
Log network density	−0.36+	0.18	−0.30	0.19	0.69***	0.09	0.13	0.10
Control Variables								
Log turnover	0.21**	0.06	−0.11*	0.05	0.32***	0.05	−0.11	0.07
Log employees	0.13**	0.04	0.10*	0.05	0.17***	0.04	0.06	0.05
Profit dummy	0.03	0.08			0.05	0.23		
Log leverage	0.87***	0.21	0.21	0.20	−0.31	0.29	0.06	0.39
Log amount invested management	0.15+	0.08	−0.11	0.07	0.06	0.05	0.05	0.09
Vendor dummy	0.11*	0.05	0.12	0.09	0.01	0.07	0.19*	0.09
Technology dummy	−0.02	0.08	−0.14*	0.06	0.08	0.08	0.10	0.07
Buy-in dummy	0.06	0.04	0.07	0.06	0.07	0.11	−0.08	0.10
Investor led buyout dummy	0.15	0.10	−0.18*	0.08	0.34***	0.08	−0.10	0.12
Bimbo dummy	0.08	0.07	0.02	0.11	0.00	0.09	−0.13	0.17
Receivership dummy	−0.34**	0.12	−0.44**	0.15	−0.76***	0.10	−0.55*	0.22
Divestment dummy	0.02	0.05	−0.08	0.06	−0.06	0.09	0.10	0.11
Secondary buyout dummy	0.13	0.09	−0.08	0.06	0.05	0.07	0.13	0.16
Log funds managed lead	0.19***	0.04	0.06	0.04	0.17***	0.04	0.07	0.04
Log # IPOs lead	−0.01	0.05	0.03	0.07	−0.11	0.09	0.02	0.07
Log funds raised buyouts	0.20***	0.05	0.17**	0.05	−0.10	0.18	−0.03	0.19
Log # investors	−1.48***	0.15	−0.55**	0.16	−1.27***	0.13	−0.51***	0.14
Log estimated price earnings			−0.07	0.09			−0.16	0.12
Log estimated firm value	0.14***	0.02			0.09+	0.05		
Number of observations	563		473		371		340	
P-value of log likelihood test	<0.0001		<0.0001		<0.0001		<0.0001	
R-Square	0.87		0.15		0.88		0.27	

[a] The constant term and the dummies that indicate the region of the buyout are not reported here.

† p <0.10 , *p < 0.05, **p < 0.01, ***p < 0.001.

Discussion and Conclusion

In this study we sought to extend previous research on the impact of competition on the different activities in which PE firms are involved. More specifically, we examined whether the extent of industry concentration and the extent of interfirm networking through syndication had an impact on the prices PE firms need to pay to acquire investment targets. We tested our hypotheses by analyzing the prices PE firms paid to acquire buyout targets using a novel hand-collected data set comprising the population of buyout transactions in the United Kingdom over the period 1993–2002. We employed both an absolute measure, total transaction value, and a relative measure, transaction-value-to-EBIT, to assess the price PE firms paid to acquire firms. Our results consistently indicated that higher levels of market concentration are associated with lower prices. Contrary to our expectations, we found a positive impact from network density on the price investors pay to acquire buyout targets in the period 1998–2002.

The control variables included in the regression analyses also showed some interesting and remarkable results. First, the larger the amount invested by the management of the buyout firm, the higher the price investors are willing to pay. Second, if the vendor retains a financial stake in the buyout target, PE investors are willing to pay a premium. These results show that both the absolute amount invested by the management and the provision of vendor finance provide a positive signal of the value of the underlying buyout target. Third, in line with Gompers and Lerner (2000), our results show that the total flow of funds into the industry has a positive impact on the prices investors pay to acquire targets. Fourth, in line with Cumming and Dai (2009), the total amount of funds managed by the lead PE firm has a positive impact on the valuation of the buyout firm. Fifth, our results consistently indicate that the higher the number of investors active in a given year, the lower the prices associated with buyout firms. This finding is remarkable. One potential explanation for this finding is that lower prices attract more PE investors.

This study contributes to the existing literature in several ways. Previous studies that have looked at the impact of competition on the price investors pay to acquire companies in the PE market have ignored the effect of industry concentration (Gompers and Lerner, 2000; Ljungqvist and Richardson, 2003). Our study adds to this literature by showing that industry concentration has a significant impact on the price PE firms need to pay to acquire buyout firms. From a theoretical point of view, this finding has important implications. First, according to corporate finance theory, the value of a security is determined by the expected future cash flows and the risk associated with these cash flows. Our results indicate that the price of a security is partly driven by the structure of competition in the supply of finance. Second, whereas financial markets are typically represented as being perfectly competitive, our results provide

evidence that some segments of the private capital market are not perfectly competitive. As such, one source of returns for PE players active in the U.K. PE market might have been market inefficiencies arising from imperfect competition. Imperfect competition in financial markets has also been documented for traditional banking (Berger and Hannan, 1989; Bikker and Haaf, 2002), investment banking (Chen and Ritter, 2000), and deal-making activity (Christie and Schultz, 1994).

Recently there has been considerable debate about the potential detrimental effect syndication might have on the extent of competition in the PE market. For example, U.S. antitrust authorities have started investigations into "club deals" led by the world's biggest PE firms. Hochberg et al. (2010) also show for the U.S. venture capital market that syndication networks help to prevent entry of new players in the market and as such have a negative impact on the prices paid to invest in early-stage deals. Our results, however, do not indicate a consistent negative effect from syndication on the extent of competitive rivalry. On the contrary, for the period 1998–2002, our results indicate that an extensive network of interfirm collaboration helped firms to gain access to larger deals which might not have been available when investing alone. By syndicating, PE firms are clearly able to spread some risk and obtain additional funds to attract larger deals.

This study has limitations that suggest a number of avenues for extending and enhancing current research. First, when we used the transaction-value-to-EBIT ratio as a dependent variable in our regressions, the explanatory power of the model decreased substantially. One potential reason for this is that multiples are more sensitive to fluctuations in the underlying value drivers, such as earnings and cash flows. Second, we have focused on the later-stage buyout market, which differs significantly from the early-stage venture capital market. For example, venture capital firms tend to be more specialized compared to buyout investors. Future research could examine whether our results also apply to the early-stage venture capital market. Third, one potential problem with our network density measure is that it doesn't take into account the distribution of relationships among actors in the PE community. For instance, if everyone is on average highly connected to everyone, there may be a substantial reduction in competition. Podolny (1993), however, has shown that high-status investors prefer to work with firms of similar status. Therefore interfirm relationships might not be evenly distributed, and hence the reduction in competition through interfirm networks may be attenuated. Future research could explicitly take into account the distribution of interfirm relationships among actors in the organizational community. Fourth, as compared to the early-stage PE market, the later-stage PE market involves less syndication, and hence interfirm networks are less extensive. Therefore the impact of interfirm networking on the prices investors need to pay could be examined in the early-stage PE market.

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Notes

1. We also use a second measure that is similar to the one used in the investment banking market. In the case of syndication, all the credit for financing a deal is given to the lead PE firm. The market shares of investors participating as nonlead investors are hence not taken into account. The results stay the same when we use this measure.
2. In separate analyses not reported here, we included the concentration measures from the year of the transaction. The results stay the same, however.
3. Our data indicate that the average time to exit for a syndicated investment is between three and four years. This figure, however, does not take into account right censoring as we do not know all the realized exits. Therefore we used an average of five years. We tested the sensitivity of this assumption by using a moving window of four years and six years. The results stay the same.
4. In order to calculate the average price-earnings ratio of similar firms, we followed the methodology suggested by Dittmann and Weiner (2005).
5. In order to calculate our industry concentration ratios, we use the full data set.
6. The median value of the turnover is similar between the observations included in the sample and those in the population (median = £11.45 million versus median population £12.23 million).
7. The variance inflation scores do not indicate problems of multicollinearity. The mean VIF of the main model including controls equals 1.73.
8. We report the analyses using the HH concentration index. If we run the analyses using the CR4 concentration index we get the same results.

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CHAPTER 9

A COMPETITION LAW ANALYSIS OF PRIVATE EQUITY "CLUB DEALS"

FAYSAL BARRACHDI

> Policymakers always need to consider what they can do to contribute towards the creation of an environment in which economically worthwhile activity [private equity–backed buyouts] can take place but abusive conduct that is socially wasteful is curtailed.
>
> Ferran (2007)

Unrestrained concentration of wealth, noticeable as a limited distribution of resources among actors in a society, hails back to the beginning of the capitalist system. In the past decades, we have witnessed the concentration of wealth in private equity firms. These firms appeal to individuals by their promises of high returns in relatively short periods of time. Kohlberg, Kravis and Roberts (KKR), as pioneers of the modern private equity branch, have introduced relatively short-term investment strategies that have replaced a legitimate part of the long-term investments in traditional respected companies (Kaplan 2007). In their successful period, private equity firms have conducted large transactions in which money kept falling from the sky. Their self-proclaimed status of "masters of the universe" has enabled them to bring capitalism to a whole new stage (Diamond 2007).

The current macroeconomic turmoil, however, marks the end of a period of restrictive modesty. The extensive accumulation of capital by private equity firms is

believed to be extremely detrimental to financial markets and needs to be avoided. A general loss of reputation of private equity firms makes it more difficult for them to attract the necessary liquidity to finance their investments (Axelson et al. 2008). The Blackstone Group, an industry leader in private equity–backed transactions, demonstrated fluctuating figures in the past three years. Economic net income figures varied from approximately €940 million negative in 2008 to €550 million positive in the year 2009. Socioeconomic uncertainty has forced private equity players to revise and diversify their existing strategies of investment and portfolio company exit. A growing number of private equity firms are considering syndicated financing of their deals (Cumming et al. 2007). Fierce competition among private equity firms to solely acquire target companies grows less popular by the day. The rationale behind this transition of private equity toward syndication is to be found in reasons of necessity, risks, and returns (Cumming 2010).

Specialized economic and finance literature on private equity "club deals" primarily copes with, among others, issues of portfolio diversification (Manigart et al. 2009), value adding (Bygrave 1987; Brander et al. 2002), and resolving agency conflicts (Admati and Pfleiderer 1994; Meuleman et al. 2009). This chapter, in contrast, produces a law assessment of private equity club deals, which nurtures the rising interest of European and national regulators in the subject matter. The legal frame of reference for this chapter comprises European Council Regulation on Merger Control (EMCR), article 101§1 of the Treaty on the Functioning of the European Union (formerly 81§1 Treaty of the European Community), and case law.

Put crudely, private equity covers early-stage venture capital and later-stage buyout transactions. This chapter will focus on the latter. A research gap regarding the competitive behavior of private equity buyout has inspired the author to dedicate this chapter to the topic. In this vein, I begin with a description of private equity and club deals. Reference will be made to existing literature on the issue at hand. A first introduction of private equity club deals to the world of (competition) law and regulation will be made as well. I then examine the structure and elements of club deals against the backdrop of the contemporary European Union law framework (i.e., EMCR and article 101§1 TFEU regime). The central research question to be answered is: What is the legal position of private equity club deals, and how should they be treated under the current European Competition Law framework?

Private Equity Club Deals

Although economic theory was banned from legal discourse fifty years ago, nowadays the two are intrinsically connected and mutually interdependent. Economic

analysis and concepts are involved in the analysis of traditional areas of the law, and to a certain extent vice versa (Posner 1973; Kaplow and Shavell 1999). This chapter draws experience from the "law and economics" discussion and underscores their mutuality. Having said this, it is inevitable that a competition law analysis of private equity club deals expresses this mutual relationship between law and economics (La Porta et al. 1998). On the left side of the law and economics spectrum, I consider an elaborate descriptive analysis of the basics of private equity. Following the line, I conclude the section with a proper introduction of private equity club deals to the world of European competition law and regulation.

A Descriptive Notion of Private Equity

Most of the well-known private equity players or "alternative investment" we read about in financial newspapers are large umbrella firms consisting of many subfunds, including private equity funds, hedge funds, real estate, closed-end funds, and fund of hedge funds. I focus here on the private equity branch.

Kaplan and Strömberg (2008, 5) describe private equity funds as "closed-end" vehicles that are structured as limited partnerships with a general managing partner and limited partners (institutional investors, banks, or retail investors) who invest capital in the fund. Private equity funds in general have a fixed life, in which a target company is acquired, delisted, restructured, and sold (Armour and Chefians 2008). As mentioned earlier, private equity roughly knows two types of funds: venture capital and buyout firms (McCahery and Vermeulen 2006). While venture capital funds invest in high-tech start-up companies, buyout funds focus on publicly traded companies.

Aside from their legal structure and investment strategy, private equity funds are also known for their distinctive methods of financing. Similar to conventional companies, private equity firms draw liquidity through the issuance of securities, bank loans, or securitization transactions. The difference from conventional financing lies in the debt-based character of private equity transactions (Cumming 2010).

Jensen (1989, 10) has cogently highlighted the debt structure of private equity investments. In his classic paper "Eclipse of the Public Corporation," he explains the efficiency and benefits of debt-based financing. Prior to the debt financing of investments, conventional financing was done through large sums of equity. To equalize the balance sheet of the company, conventional companies use a certain amount of borrowed money (debt) and a portion of the stockholder equity to finance their investments (Van der Elst 2006). To diminish excessive risks, the debt-to-equity ratio is characteristically proportional (a 50–50 ratio is fairly typical for established businesses). Private equity firms, though, are notorious for borrowing large quantities of capital (typically from banks or institutional investors) to finance their deals. The amount of stockholder equity they use for their transaction

is for this reason rather limited. The debt-to-equity ratio of private equity transactions is normally 70 percent debt and 30 percent equity (Renneboog et al. 2006). The preference for debt-based finance can be explained by straightforward economics. For instance, a private equity firm invests €100 equity. If the turnover of the transaction is €200, it means that the equity (profit) has increased 100 percent (from €100 to €200). What happens if debt money is used in the example? A transaction will be based on €30 equity and €70 debt. The turnover of the transaction will be €200, as before. However, this time the firm only invests €30 equity. From the €200, the firm needs to deduct debt amounts + interest, which is €70 including €7 of interest (10 percent interest rate). After the deduction, the firm keeps €123. Having invested only €30, this means the equity has increased almost 400 percent (namely from €30 to €123).

In the banking and finance literature, debt-based finance is often preferred above equity-based financing due to the "leverage-effect" (Smit 2003). From this basic example, it should be clear why private equity firms largely base their buyout transactions on borrowed funds. Yet it should be noted that the availability of debt money has gravely declined in the current market conditions. Prior to the financial crisis, debt-to-equity ratios were 70 percent (debt) to 30 percent (equity). At present these ratios are more likely to be closer to 50–50 percent, which require private equity funds to take higher risks and reduce their return on investment prospect.

The Creature Called "Club Deal"

Private equity club deals are nothing more than consorted or syndicated financing of transactions (Kaplan 2009). The concept of club deal financing was not invented by recent private equity funds. The use of syndicated financing flourished in the 1970s and 1980s among corporate borrowers and third world country governments (Barnish et al. 2005). Since the expansion of the leveraged buyout transaction, the use of syndicated financing has materialized among private equity firms as well. Club deals involve large-denomination loans that are serviced by a group of commercial banks for one or a number of borrowers. They are structured in periodical (four to six years) lines of credit (in technical terms: revolver facility) available for borrowers. Following the credit line stage, the loan converts into a term loan with a fixed schedule for reimbursement (Megginson and Smart 2008). The size and volume of syndicated financing in general has grown in the past twenty years to €4.5 trillion in 2007. The increasing popularity of club deals can be explained by their benefits to both borrowers and lenders. While borrowers are relieved from their issuance costs associated with bonding financing, lenders profit from fewer concentration risks, less single-lender exposure, and less asymmetric information. A serious downside still is the limited monitoring by banks. As a result there is a serious double moral hazard risk in the mutual relationship between the bank and the borrower (McCahery and Vermeulen 2006).

Aside from the lender and borrower, there are typically a number of other parties involved in a syndicated financed transaction. Figure 9.1 demonstrates a typical, though simplified, picture of a typical syndicated loan structure that is often used in the finance of leveraged buyout deals. In practice we see different variations, tailor-made for private equity demands.

As Figure 9.1 illustrates, syndicated buyout deals include one borrower or more, with a provision for the accession of new subsidiary borrowers under certain circumstances from time to time (Loan Market Association [LMA] 2009). The structure holds multiple term loans with revolver facilities for borrowers

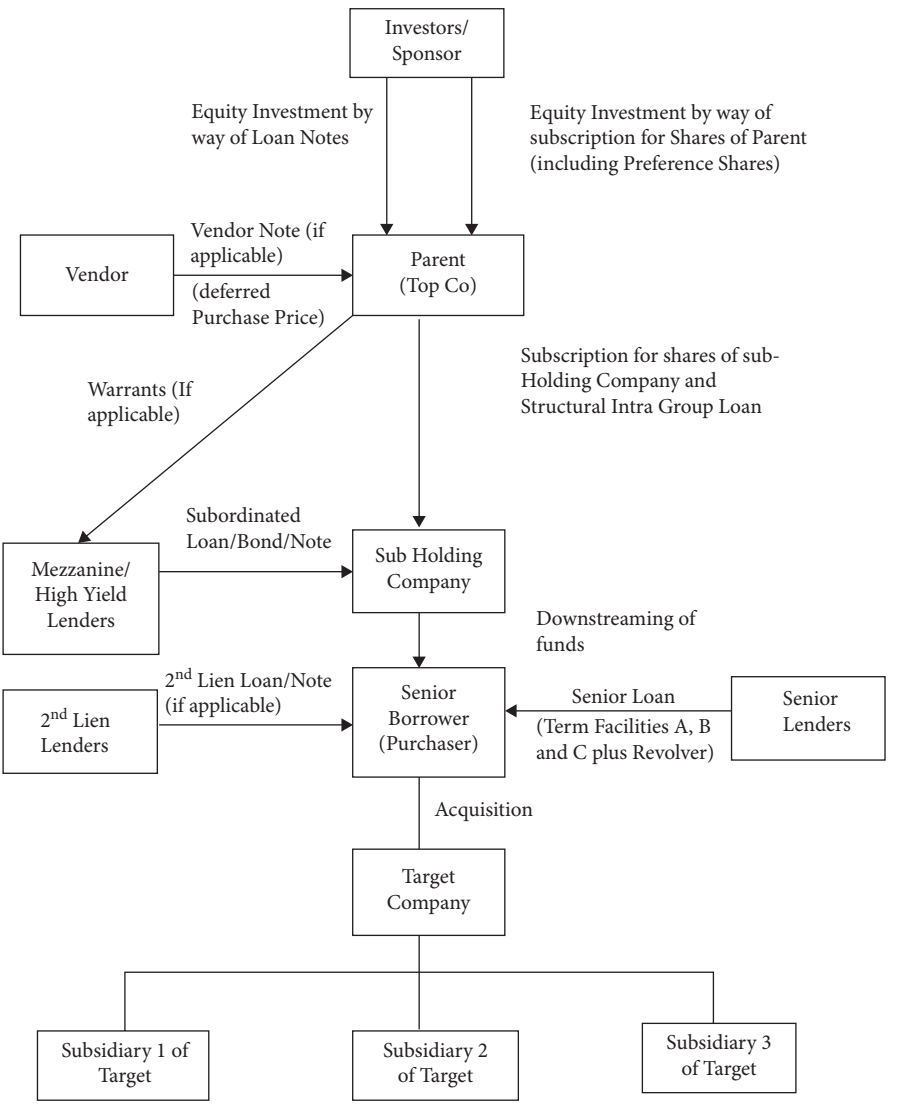

Figure 9.1 Typical (simplified) debt structure chart.
Source: Adapted from the Loan Market Association (LMA 2009, 6).

to draw down and repay amounts for a fixed period of time (Wahrenburg and Steffen 2008). Revolver credit facilities in syndicated loan structures normally have a specific limit (to draw down amounts) and are secured by the borrower's receivables or inventory (Gilson and Warner 1997). The collateral forms a key security that allows borrowers to optimize the constant availability of working capital for the capitalization base of the firm. If the borrower has secured his loan with receivables, the cash that is paid on these receivables will be transferred to the lender and used to reimburse the outstanding debt. In practice we witness far more complex structuring of syndicated loan deals in which the loans are often securitized and tranched as well. In her doctoral dissertation on collective security arrangements, Thiele (2003) has extensively analyzed the securitization of these syndicated loans. I paraphrase:

> A securitization of syndicated loan deals requires a company (called the Originator) to establish a separate legal entity, a special purpose vehicle (SPV), in order to attract liquidity. This Originator will identify different loans/claims, which will function as collateral for the securitization transaction, and transfers them to the SPV. These claims that are used in the securitization are often secured by rights of mortgage, which the Originator has on its debtors. In order to finance the transfer of these claims the SPV will issue securities (e.g. bonds/certificates). Similar to lenders in a standard syndicated loan structure, investors (bondholders) who invest in these SPVs want to have some kind of a security for their payment as well. Therefore the bondholders will obtain a security interest. In other words, every bondholder will acquire an individual claim on the SPV, which will cover the amount that is borrowed. To encapsulate, the securitization of syndicated loan structures enables borrowers to turn future claims (mortgages) into current working cash.

In legal terms, a private equity club deals roughly materializes in stages:

Stage 1: Private equity funds initiate the deal and are backed by investors that participate in the fund as limited partners ("financial sponsors"). These private equity funds consort either nationally or cross-border (Meuleman et al., 2009). Aside from the private equity players, other arrangers are involved in the setup of the club deal. The legal relationship between the financial sponsors or arrangers of the club deal is contractually arranged in interim investor agreements and covenants. A pivotal clause in such an investor agreement is the "preclosing equity syndication procedures." The preclosing procedure arranges, for example, the extent to which private equity players require the consent of their investors to syndicate a portion of their equity in the deal. In other words, a private equity fund has a specified amount of funds, and therefore it needs to be settled which investors want to syndicate (syndicated investors) or not (nonsyndicated investors) in the particular club deal. Drag-along rights for syndicated investors and tag-along rights for nonsyndicated investors should enable both to profit from the private equity club deal's potential synergies (Chemla et al., 2004).

Stage 2: The structure continues with the involvement of lenders. The lenders are to provide the additional liquidity required to finance the deal. The entire structure therefore is structurally dependent on the willingness of lenders to participate. A group of lenders ("senior lenders") forms the initial cluster of lenders that provide a share of the credit facility in order to fund senior element of the buyout, fees and payments, refinancing of existing debt in the target company group, and for working capital requirements (LMA 2009, 7). The initial lenders are also frequently seen as the co-arrangers or underwriters of the deal.
Stage 3: Potential gaps in the credit facilities are in a later stage covered by subordinated debts. These debt forms are commonly referred to as second lien, mezzanine, or high yield. These debts are *grosso modo* not secured by assets and are considered credit gap fillers.

Apart from the senior lenders and sponsors, a number of other parties are involved in the structuring of a club deal. As we have seen, borrowers are required to provide collateral in order to secure *rei vindicatio* (reclaim) by the lender. The assets or receivables of borrowers are collateralized to secure the funds and position of the lenders in a potential bankruptcy of the borrower(s). In a club deal, one of the lenders participating in the deal acts as the security agent to manage the collateral for the rest of the lenders. Evidently there are many other parties actively participating in a syndicated leveraged transaction (see Ivashina and Kovner 2010).

This section was a primer on private equity club deal structures. The structure itself is organized in such as way as to profit from efficiencies and synergies, evidently with a closed eye to potential competition law infringements. The club deal structure brings a number of parties together to cooperate in the acquisition of a target company. In the following section, the club deal structure is introduced to the world of European competition law and regulation.

Introducing the Club Deal Structure to European Competition Law

Reviewing private equity from a competition law perspective requires some knowledge about the market these firms operate in, and in what way they influence the market forces and competition in these markets. In other words, what is the relevant economic market they operate in? Moreover to what extent does private equity influence their environment or the competition in their market?

In terms of markets, club deals take place in the takeover setting. In this setting private equity acquires, delists, restructures, and sells target companies (Armour and Chefians 2008). The EU takeover market forms the background of the competition law analysis of club deals in this chapter.

There are several takeover settings imaginable. One common setting we often see is when one bidder acquires a target company. These acquisitions commonly thrive under the notion of foreign direct investments (FDIs) and cover the majority of takeover transactions. FDIs in the same or different market sectors and branches are seen all over the world. Put briefly, one company expresses interest in another company, and ultimately they come to an accord. These agreements include either acquisitions or alliances between the involved parties. In the case of an alliance, the companies will not merge, but they will work together (e.g., through a joint venture) to explore a market (Dyer et al. 2004). Acquisitions are conducted through bilateral or multilateral negotiations between the buyer(s) and the target company. The negotiations are subsequently formalized in acquisition agreements that contain a provision ("go shop" provision) that allows the parties to shop elsewhere to get a better offer (Bailey 2009). If the target company does receive a better offer and accepts this offer, the target company will be obliged to pay a breakup fee to the initial buyer(s). This acquisition procedure is rather standard, and private equity firms evidently operate along these lines as well.

Private equity buyout transactions involve the takeover of another company. Takeover scenarios, like a private equity leveraged buyout, can entail elements that might have a negative effect on the competition in a particular market. This negative effect can occur in three ways. First, two companies operating in the same market will merge into one big firm (horizontal merger). This horizontal merged firm could become able to raise prices or reduce choices and innovations in a particular market (Larouche 2003). This type of merger could be problematic, because it might harm competition and give rise to greater market concentration and thereby lead to oligopolistic coordination (Geradin and Alhauge 2006). A second category is nonhorizontal (or vertical) mergers. In this case, parties from opposite markets, that is, upstream (supplier) and downstream (major customer) markets, decide to merge. Third are conglomerate mergers. This group functions as a rest category in which one firm might have entered the market of another firm. This could potentially harm the horizontal competition in that market. In competition law literature, these categories apply to conventional business activity by public and private companies.

In brief, two competition concerns have been raised regarding the growing presence of private equity on the European takeover market. The first concern is based on the fear of the ongoing accumulation or absorption of European companies by private equity firms. This fear is fueled by a deep sense of *patriotisme économique*. Partisans of the movement against private equity growth have pointed out a potential breach of European Merger Control Regulation. The second fear focuses on the club deal structure itself. Out of fear of collusion, the argument is that private equity colluding infringes article 101 §1 TFEU . The next section elaborately covers both concerns.

Private Equity Club Deals and European Competition Policy

Private equity club deals have thus far remained off the radar of European competition authorities. In the previous section, it was explained that club deal structures involve several private equity players that collectively set up a structure in which they attract capital (equity) from a syndicate of lenders. Club deal structures have become more popular among private equity firms due to their synergetic benefits.

Unlike the 1980s, when everyone was extremely interested in private equity investments, particularly junk bonds, in the 1990s the size of the average private equity buyout deal was visibly tamped down. The number of buyout transactions dropped in the beginning of the 1990s. This drop was caused by different factors, *inter alia*, an economic recession, tighter regulations, and, most important, by the "crash" of high-yield bonds (junk bonds) that were commonly used as finance tools for buyouts during the 1980s (Wright et al. 2007). The junk bond was a tool to attract large amounts of debt money. The bond offered high returns for a relatively low price.

In the 1990s other strengths emerged in the corporate field. Holstrom and Kaplan (2001, 132–133) illustrate the emergence of public company executives and shareholder-friendlier strategies in the beginning of the 1990s. This hindsight led to an overall decrease in the number of private equity buyout transactions. The effects of the economic recession and the rise of the economic power of institutions and managers of the publicly traded companies on private equity buyout was clearly apparent in the United States and to a lesser extent also in Europe (Martynova and Renneboog 2005). The decline in buyout activity in Europe led to strategy reconsiderations and diversifications on the part of private equity funds. In order to diversify this sudden increase in risk, the option of syndicating became more attractive. Favorable macroeconomic circumstances led to a noticeable increase in buyout deals.

A number of papers have elaborated on the factors that caused the "rebirth" of private equity in the past ten years. The factors often mentioned are (1) the burst dot-com bubble, (2) regulatory reform, (3) general enthusiasm for alternative investment strategies among investors, and (4) the reavailability of debt money (Martynova and Renneboog 2006). Evidently it is has been the combination of these and other factors that has helped private equity to regain market share.

The augmentation of buyout deals on cross-border European markets has virtually remained outside of the spotlight of the European Commission. This resulted in minor attention from competition authorities for private equity club deal structures. Both national competition authorities and the European Commission have lacked interest in any policy action on the issue at hand.

Presently more private equity funds consort in the acquisition of target companies rather then individual private equity firms making independent bids (Meuleman et al., 2009). Despite their presence on global markets, little is known about their potential pro- and anticompetitive effects. Are they really as anticompetitive as some parties assume? Here I examine the effects of these club transactions on the competition and review the trade-off between creating a level playing field for private equity firms and tighter competition laws.

The cross-border takeover market is the relevant economic market in which private equity consortium bids take place. The next section captures the contemporary legal framework that covers this market.

Legal Frame of Reference I: EU Council Regulation on Merger Control

The European Council Regulation on Merger Control (EMCR) was created in addition to the existing procedures under articles 101 and 102 TFEU (formerly 81 and 82 of the EC Treaty). The gap in European Union law to deal with mergers that might harm competition had to be filled. Consequently the EMCR framework was created. Analysis of EMCR is well covered in the literature. To avoid repetition here, only the pivotal provisions of Council Regulation No. 139/2004 on the control of concentrations between undertakings germane to the topic at hand are assessed.

The pivotal provision in Regulation 139/2004 is article 2(§3). It covers the general scope of the regulation: "A concentration which would significantly impede effective competition, in the common market or in a substantial part of it, in particular as a result of the creation or strengthening of a dominant position, shall be declared incompatible with the common market." This article states that a concentration that leads to a dominant position, and thus would affect the competition in a particular market, is an infringement of EC competition law. This brings up two questions: What determines the establishment of a concentration? And when does a concentration impede the competition or lead to a dominant position? From a formal point of view, these questions share a common answer, stated in the EMCR. A merger must have a community dimension. This community dimension is satisfied when a transaction reaches specific turnover thresholds. These requirements are applied without regard to substantive competition issues. In other words, in the community dimension test no attention is given to the particular countries, nationalities, or applicable laws (Boyce and Tubbs 2007). This suggests that a transaction with little or no EU connection can be subjected to EMCR as well. From a substantive point of view, EMCR captures both mergers that impede competition and mergers that establish dominance. In contrast to prior merger control, contemporary merger control applies to oligopolies as well (see standard European Court of Justice case law, e.g., *Rheinzink, Deyestuff, Woodpulp-II, Bayer, Airtours*).

Additionally, key is the notion of "control" and the notion of "decisive influence" stated in Regulation 139/2004. Article 3 §2 defines control as "the possibility of exercising decisive influence of the whole or parts of one or more other undertakings." A concentration in the sense of EMCR is constituted insofar as there is a shift in control. The notion of control prima facie grasps cross-border takeovers (mergers and acquisitions). For example, if a Dutch company is determined to acquire a particular amount of shares (voting rights) in a French company and thus is able to influence the latter company's commercial strategy, a shift in control is constituted. This notion of control leaves several questions unanswered. In the light of the topic here, the question is to what extent so-called financial acquisitions conducted by private equity firms fall under the notion of control in article 3(§2) of Regulation 139/2004. After all, there is a fundamental difference between financial takeovers and strategic takeovers. Financial acquisitions are conducted for the seller's ability to generate cash. Strategic acquisitions are conducted for the added (synergetic) value of the acquisition, that is, entry to new markets, efficiencies, economies of scale, know-how, and so on (Ferran 2011).

Companies that are subjected to EMCR are required to provide prenotification of the concentration to the Commission prior to its implementation (article 4 Regulation 139/2004). This obligation enables the Commission to review the concentration and determine whether there is an impediment to the competition (during a "stand-still" period; article 7 Regulation 139/2004). The burden to notify can be lessened when there is no real threat to the competition. Companies are then allowed to follow a simplified notification procedure (Boyle and Tubbs 2007). A test case for the application of EMCR to private equity was the *Blackstone/Hilton case* (Case No. COMP/M.4816).

In July 2007 the U.S.-based private equity giant the Blackstone Group acquired the Hilton Hotel Group for €16.8 billion. The concentration had to be notified to the Commission, based on the sole control that was acquired by Blackstone. The community dimension of the transaction was based on the combined aggregate worldwide turnover of €5 billion. This was the basis for the acquisition to be reviewed by the Commission. In the *Blackstone/Hilton case*, the Commission issued a declaration of nonopposition (article 6§1(b) Regulation 139/2004). Prior to this declaration, the Commission carefully assessed the transaction on its merits and dangers to competition. In the substantive assessment, the Commission examined the vertical and horizontal effects of the Blackstone transaction on the specific product markets. Regarding the horizontal effects, the Commission left open a precise definition of the relevant product market (hotel accommodations). Subsequently there was one particular vertical effect. Blackstone is a global asset manager, which means it owns companies and services in different type of markets. In this case, it appeared that Blackstone owned an electronic booking services system (GDS Services), which could give rise to affected markets. For the assessment of the vertical effects, it was important whether or not the relevant product market was a GDS-only market or a market that included all channels for hotel bookings. Based on the prior *Travelport/Worldspan* case (Case No COMP/M.4523), the Commission concluded

that the relevant market was the GDS-only market. In *Travelport/Worldspan*, the Commission concluded that a GDS-only product market best reflects the current competitive conditions for the GDS providers in the EEA. In *Blackston/Hilton*, the Commission argued that a low combined market share and the presence of strong competitors assured that both the horizontal and vertical effects of the transaction did not raise serious doubts as to the compatibility with the common market.

The small number of Commission cases articulates that the majority of private equity takeovers fall below the minimum thresholds to actually affect EMCR. A more serious competition concern regarding the club deal structure should therefore be sought elsewhere, namely in the consorting nature of private equity club deals.

Legal Frame of Reference II: Article 101 (§1) TFEU and the Concern of Bid-Rigging

Despite several serious competition concerns, it seems that private equity de facto operates below the minimum thresholds of EMCR. This raises the question of whether private equity collusion falls under any other competition law instrument.

In short, the primary goal of European competition law (ECL) is to secure the competitive market structure. It is important to bear in mind that over time ECL has made a shift, moving away from a quite formalistic and legalistic approach toward a more economy-based approach (e.g., reg. 1/2003 replaced old reg. 7/62). This shift essentially means there is now more room for economic analysis in European competition law (Larouche 2003). Economic analysis has become paramount, since it helps us to understand certain effects on the market (rules are linked to economics). This economics-based approach has an important influence on the application of ECL provisions, like article 101 TFEU. This section focuses on article 101 and its potential applicability to private equity.

In 2001 the Commission issued guidelines on the applicability of former article 81 (101 TFEU) on horizontal cooperation agreements. These guidelines were created to "help companies determine on a case-by-case basis whether their cooperation agreements are compatible with the competition rules by providing an analytical framework for the most common types of horizontal cooperation" (Commission Notice C3, June 1, 2001). Article 101§1 TFEU applies to: "horizontal cooperation agreements *or concerted practices* [italics added] which have as their object or effect the prevention, restriction or distortion of competition." There is a common distinction between horizontal cooperation agreements that have the distortion of competition as an objective, and agreements that have an anticompetitive effect. The former group of agreements are a per se violation of European competition law (Craig and de Burca 2003). The latter group of agreements need to be examined on

their actual effects on competition and the market in order to conclude whether or not they fall under article 101§1 TFEU. Hard-core restrictions cannot be justified, but an agreement that has a restrictive effect can be justified under article 101§3 TFEU. From the European Court of Justice case law (*Delimitis, STM Métropole*) it appears that article 101§3 TFEU entails a "rule of reason" test, which involves an assessment of the pro- and anticompetitive effects of an agreement or act (Geradin and Elhauge 2006).

If we consider article 101§1 TFEU to be the legal frame of reference here, the competition concern has to come from private equity frustrating fair takeover practices. After all, article 101§1 TFEU requires a horizontal cooperation or concerted practice that either prevents, restricts, or distorts the competition in a particular market. Prior to any conclusion about a potential breach of European competition law, we need a workable definition of bid-rigging. It is often considered to be the collusion between private equity players that normally compete with each other and with strategic bidders (conventional companies). This collusion involves the sharing of valuable information between the colluding parties to the detriment of other parties involved in the takeover process (Bailey 2009). In addition to the sharing of information, colluders agree among themselves to direct the bidding process. This concerted practice or agreement (settled by contract) is essentially a form of market allocation and price fixing. For instance, it might be clear by contract who is designated to win the bidding process.

In conventional auction theory, bid-rigging is illustrated as "an illicit business round, that would otherwise be expected to compete, secretly conspire (agreement amongst conspirators) to raise prices or lower the quality of goods or services for purchasers who wish to acquire products or services through a bidding process" (McAfee and McMillan 1992, 579; Porter and Douglas 1992). In their article, McAfee and McMillan focus on bidding rounds in which bidding parties collude in the form of illicit cartels. The basic attributes they describe are useful for the analysis of private equity club deals in this chapter. McAfee and McMillan continue by pointing out:

> Bidders in a public auction usually have to deal with asymmetric information problems. This asymmetric information lays in the adverse selection problem, which boils down to the situation that every cartel (colluding) member does not know what the other(s) are willing to pay for the item being sold. In order to successfully collude, the bidding parties have to create a method that enables them to select a winner and winning bid in a bidding process. (580)

Conventional auction theory uses the assumption that collusion leads to a lower level of competition per se. This is known as the "collusion hypothesis," and it forms the core of traditional literature on public auctions (Graham and Marshall 1987; McAfee and McMillan 1992). In addition to the collusion, alternative models have been developed that have other assumptions. Boone and Mulherin (2010) document the literature on these alternative models in auction theory. Aside from conventional auction theory, alternative models abandon the assumption of a fixed

number of bidders in auctions (Klemperer 2002), and they recognize the complex interactions between information, auction design, and the aggressiveness of bidding parties (Mares and Shor 2008). While conventional auction theory practically diminishes all positive aspects of collusion, alternative models highlight the abilities of consortia to pool resources (Klemperer 1999; Cho et al. 2002) and the synergetic value of the combined abilities of consortium members (Song 2004; Boone and Mulherin 2010). The basic premise in the alternative models is one of competition that assumes greater competition and higher prices in collusion settings. In other words, the competition hypothesis not only denies the negative effects of collusion, but it also expounds the positive effects of it. Hence the testing of the private equity club deal under article 101§1 TFEU has to be done against the backdrop of both the collusion and competition hypotheses. In the assessment it will become apparent that the latter is more likely to be applicable. However, unlike in the United States there is no comprehensive set of empirical data (Boone and Mulherin 2010) available to back up the suitability of the competition hypothesis. Instead the gap is filled with the analysis of the facts and circumstances in several recent bid-rigging affairs in Europe. The incentives to fraud are examined in the light of the topic of this chapter.

Guidance for determining whether there is a breach of article 101§1 TFEU is to be found in member states and EU case law and the interpretations of the designated supervising authorities. If we begin with the case law, there were several rulings on bid-rigging, mainly in the procurement sector (McMillan 1991; Lee and Hahn 2002; Gupta 2001). The cases provide a competition law analysis of bid-rigging notions in these particular circumstances. They cover different market segments, specific conduct, and a distinctive number of market participants. Provided that in none of the cases, private equity buyout players, let alone private equity club deal scenarios, are subject to court analysis, the cases therefore should be taken with a pinch of salt. Nevertheless I will attempt to extract several workable elements for my analysis here. The first case is the *Dutch Construction* case (TK, 2001–2002, 28 093, nr. 25; PEC 2002). This affair is well covered in the literature due to its size and the number of parties that were involved in the fraud (Hertogh 2010). Without repeating all the facts and circumstances here, I will concentrate on the appropriate elements that might resemble the takeover scenarios in which private equity club deals take place.

In this public procurement fraud case, a large part of the construction industry (a €15 billion industry) in the Netherlands was involved in the colluding of price offers for public works. Prior to each offer procedure, the construction companies arranged a secret meeting and discussed which company offered the cheapest price and increased that price (Hertogh 2010). These consultations prior to each offer procedure were the result of a history of self-regulation and were based on an elaborate system of internal norms and rules. The construction companies sought to compensate each other, to distribute all the bids equally, clear all the accounts internally, and not to disclose anything to "outsiders." Despite the prohibition of these practices by the European Commission (infringement of former article 81§1 EC)

and later also by the Dutch Competition Authority, the construction companies continued their system of preconsultation on a structural basis. In the parliamentary inquiry, held to scrutinize the causes, it appeared that the fraudulent behavior of the construction companies was the result of the dominant tradition and culture in the Dutch construction industry.

Almost naturally, this case is not a stand-alone case. In 2009 the British Office of Fair Trading (case No. CE/4327–04 [2009]) imposed fines in total of £192.2 million to 103 construction companies. Similar to the Dutch fraud, British construction companies were structurally (in 2000–2006) bid-rigging public procurement deals. In most deals, four of the six bidders were engaging in cover pricing. In another collusion case a number of preliminary questions were asked at the European Court of Justice regarding the exchange of valuable information between competitors in the mobile telephone business. This case, known as the *Dutch T-mobile* case (T-Mobile Netherlands BV c.s. v. NMa, Case No. C-8/08 [2009]), involved yet another ruling in the category of article 101§1 TFEU (formerly article 81 §1 EC) cases.[1]

A group of five telephone operators assembled a meeting to discuss the possibility of reducing standard dealer reimbursements for post-paid subscriptions. Following this settlement, the Dutch competition authority, the NMa, concluded that the agreement violated former article 81 (1) EC by virtue of its anti-competitive effect. This decision was appealed by four of the five telephone operators at the Dutch Administrative Court of Trade and Industry. In the appeal, the Dutch court asked several preliminary questions to the European Court of Justice, *inter alia*, clarity on the definition of an illegal concerted practice. First, in paragraph 43, the European Court of Justice states that it suffices that a concerted practice "be capable, having regard for the specific legal and economic context, of resulting in the prevention, restriction or distortion of competition within the Common Market." Second, the fact that the competitors remain market participants, after the exchange of information, is enough to establish a violation of European Union law (§53). Third, the European Court of Justice underscores that importance of the particular market and its characteristics. The Court states that it depends on the type of market how much contacts between competitors are necessary to infringe European competition law. In this oligopolistic concentrated market, only one meeting of the competitors led to a violation of former article 81 (1) EC, albeit the lack of demonstrating the consequence of the concerted practice (§59–62).

Despite the claim of several authors that the *T-Mobile* case is simply a repetition of previous European Court of Justice case law, the case does represent the European Court of Justice approach to the eligibility of "information sharing" between competitors. It is this approach that has an added value for our analysis here. However, a critical remark is that the European Court of Justice does not clarify when information sharing does not constitute bid-rigging. The European Court of Justice clearly states in the *T-Mobile* case that it depends on the particular market to what extent information sharing is allowed. This nuance should

prevent any form of generalization. In our case, we have a takeover market. In this market, there are in theory many parties. Once a company becomes a target for acquisition, we have a number of bidders (strategic and financial) that form the bidders in the public auction. The scenario, as in the *T-Mobile* case, is less likely to occur due to the number of parties that in theory could be involved in a takeover transaction. An oligopoly or monopoly on the takeover market is, in this sense, less conceivable.

These bid-rigging and collusion cases are a small portion of the total number of bid-rigging affairs. Most of the bid fraud takes place in the public procurement sector. National competition authorities and the European Commission are fully aware of this fact and have developed their own categories and concepts of collusion to combat auction fraud. Competition authorities commonly distinguish three main forms of bid rigging:

1. Bid-suppression: This is a bidding scenario wherein a number of bidders that would normally be expected to bid, and who have previously bid, agree to refrain from bidding and to withdraw previously submitted offers. By doing this, the party that does not withdraw will be bound to win the auction (Lengwiler and Wolfstetter 2005).
2. Complementary bidding: In this setting a number of fraudulent competitors defraud the auction by making bids that are either too high or have too many special terms to be accepted by the buyer. This form of bid rigging is less visible than the first one, but nevertheless occurs more frequently (Kaufmann and Vicente 2005).
3. Bid rotation: In this situation, every conspiring competitor is making an offer, but takes turns being the low bidder. In the end the conspirators will determine the allocation of profits among themselves. This form of bid rigging was particularly popular in the construction fraud cases (see above).

These three scenarios mostly express the conventional thoughts on public auctions, highlighting the illicit behavior of fraudulent club deal members. None of the three scenarios particularly precludes the negative effects of collusion, let alone underscore a positive element. The emphasis seems to be on the specific role or conduct of the consorting party. In other words, if the consorting party acts in one of the three ways, then it is likely that he is attempting to frustrate or fraud the normal bidding process.

Taking the above into consideration, we have to assess whether syndicated private equity buyout deals or club deals resemble the circumstances described in the case law. In a standard takeover setting private equity could potentially collude in the acquisition of a target company. A public auction of a target company attracts different parties, including private equity firms and conventional strategic bidders (conventional companies). Evidently public auctions require the parties to coincide with the rules of fair competition. In other words, auctions have to be fair and are supposed to be processed at normal market prices. The competition concern here

is essentially twofold. The first feature of club deals that might soften competition is based on the actual setting it creates. The second element is the act of bid rigging by club deal members themselves.

The first concern is related to the setting that is created by club deals. Club deal structures enable members to collectively make offers (or not) on a certain target company. This collective power of the club deal members entails a risk of creating a "monopsony power" situation. That is, the price paid for the target company is depressed to a level below the competitive price (Bailey 2009). In a monopsony setting, one buyer dominates and forces the sellers to agree to the buyer's terms (Zeuthen 1955). For instance, one company may have no choice but to sell its business to one particular buyer that is the only buyer for its product. Here the buyer virtually controls the price at which it buys the company. Fair auctions normally thrive in the form of either first-price sealed-bid auctions or so-called ascending bid auctions (Bailey 2009). In a first-price sealed auction, the bidding parties value the target company and make their offer. Subsequently all the offers are collected and the highest bidder wins the auction. In an ascending bid auction, the bidders have the opportunity to raise their bids once they notice that other bidders offer more money (Klemperer 2000). This type of auction is therefore based on a process in which bidders observe and respond to each other. The competition concern relating to the club deal structure is that members might interfere with the rules of fair auctions. Private equity colluding in an auction essentially means that the number of bidders available to make an offer is drastically reduced. In economics some models assume that the fewer the bidders the lower the bidding price will be (Smith 1983). Following this assumption, the concern would arise that club deal structures could soften the competition. Bailey (2007) lucidly exemplifies this concern with reference to oil companies in the 1970s in the United States that colluded for oil lease contracts. U.S. lawmakers reacted to this by creating knee-jerk regulations that restricted the collusion.

The second competition concern regarding private equity club deals is the actual bid rigging itself by club deal members. In other words, to what extent are private equity consortium members likely to collude? The answer to this question has to come from an analysis of the previous case law, due to the lack of empirical data about private equity collusion in European markets. Taking the case law into consideration, we can distill a number of elements that have led to the fraudulent behavior in those cases. In the Dutch construction fraud case, we saw that the collusion was part of the culture that governed the construction industry. Preconsultations among competitors, or simply collusion, was part of a "way to do business" in the Dutch construction business. The parties involved created a system of internal rules to make the fraud as efficient as possible. However, what is more interesting is why the parties colluded. A recent study on the Dutch construction fraud case focused on the legal consciousness of the Dutch construction industry (Hertogh 2010). Hertogh convincingly illustrates the industry approach to the authority of law. Construction companies obviously respect the law, but consider it to be rather inflexible, cumbersome, and trust corroding. In particular,

the law is considered to be the sword of Damocles for the mutual understanding and trust between the construction companies. Besides, several construction parties argued that the price-fixing and bid rigging were always supported by the Dutch government. This led to the denial of the normative status of competition law in the construction industry. It is evidently a question whether these circumstances are similar in the European takeover market in which private equity club deals occur. Albeit the attitude of the private equity industry is to prefer light regulation due to the costs of inflexible rules, there are no actual indications that the private equity industry has a similar culture of defrauding. A fraud culture similar to that in the Dutch and British construction industry is also less likely to occur in the private equity industry due to its diversity and global nature. Private equity buyout firms operate in Western, BRIC, and new emerging markets in which there is not much room for a unified business culture. Structural preconsultations are not standard and do not occur on the same basis as in the construction cases. The private equity business therefore is not structured on the same pillars of mutual trust as the defrauding construction companies were. Obviously there are industry standards and norms of trust among private equity players. However, these are not to the extent that law is considered to be trust corroding. Finally, there are no similar notions of governments supporting potential bid rigging that could affect the normative status of competition law regimes in the European member states. This brings us to the conclusive question: Should there be any competition concern?

Should There Be Any Concern about Collusion?

After closer examination the competition concern of monopsony appears to be less strong than many would expect. It is not likely that private equity club deals would create a state of affairs that would soften competition. We have to bear in mind that the original concept of monopsony was developed in the economics literature, and has since then been applied to various markets and cases. In the auction literature, other alternative models have been developed in which fewer bidders do not ipso facto soften competition. The so-called competition-hypothesis-based models focus on the positive elements of collusion and actually consider that collusion brings greater levels of takeover competition. In the United States this conclusion is backed by empirical data that show a correlation between private equity collusion and takeover competition (see Boone and Mulherin 2010, Table 5, Panel B). Given the similarities between the European and U.S. takeover markets, a similar conclusion can be expected for the European scenario. The analogy between both takeover markets is based on the comparative work of Ferrarini and Miller (2009) and Ventoruzzo (2008) between the U.S. and EU takeover regimes. Both works explain that despite the differences between

the U.S. and the European approach to takeovers, the takeover markets in both jurisdictions operate similarly.

If we linger somewhat longer on the argument of monopsony, we could argue that the basis of the monopsony theory is grounded on the assumption that consortium members would have bid individually. Is this assumption correct in this case? The notion that most private equity firms are not large enough to acquire large publicly traded companies by themselves is imperative here. If we consider that only a number of private equity houses have sufficient funds to solely bid for a large target company, it is questionable whether the rest of the relatively smaller private equity firms would bid solely on large target companies. The underlying assumption that without consortia there would be more bidders is therefore not strong. It is also questionable whether private equity firms would bid individually for the reason that they simply do not want to face the risks that come along with these large transactions. As we have seen in the descriptive section on private equity, they finance their transactions at a certain debt-to-equity ratio. Usually the largest part of the transaction is financed with borrowed money (less now than prior to the financial crisis). The acquisition of large target companies thus means that they would have to invest more equity and have to run higher risks. Furthermore considering the new investment possibilities consortia create, we could argue that private equity players would engage in the bidding of different deals simultaneously. Thus instead of decreasing the amount of bids, the consortia increase the bids due to a diversification of the private equity investment portfolios. This is another argument that weakens the likelihood of the classic monopsony scenario. In the United States this argument is also backed by empirical data (see Boone and Mulherin 2010, Table 9). A similar conclusion can be drawn for the European context. Finally, Bailey (2009) persuasively explains that a consortium of, say, one hundred private equity firms to acquire a large target company is not likely to occur for the simple reasons of inefficiency and organizational costs. A large consortium would mean that they would have to coordinate their activities, which includes coming to an agreement on the management strategies, governance, and exit strategies they will apply to the target company (Bailey 2009, 5). Consequently it is more likely that we see various smaller consortia that engage in the bidding process of a large target company.

This leads us to the answer to the question of whether there should be a competition concern. We have to see private equity club deals in a wider context. Among private equity players, there might be other, nonprivate equity players interested in the large target companies. In European cross-border markets, many strategic parties (conventional companies that acquire for strategic reasons, such as synergy values) engage in the public auctions as well (Berglöf and Burkart 2003; Enriques 2009). These strategic players counterbalance the competition concern that is related to private equity consortia. Whereas the assumption is that private equity consortia limit the number of bidders, it is likely that strategic parties will compensate for this decline. An example is the divestment of Essent Milieu N.V. (a Dutch

garbage disposal factory) from Essent N.V. In the bidding process, private equity consortia made an indicative bid. In that case, private equity did not manage to win the bidding process. Ironically a consortium of local governments became the new shareholders of the separated entity.

A Final Policy Note on the Subject of Club Deals

A brief word on the Communautaire policy is in order. Similar to other policy matters, the issue of tighter regulation is raised here as well.

Private equity firms are global investment initiatives. Many private equity funds have portfolios that comprise a large number of different industries. From a European competition policy perspective, it could be said that there has to be a trade-off between creating a level playing field for cross-border private equity takeovers and protecting the fair competition in the European internal market (McCahery and Vermeulen 2010). Thus the discussion of any policy consideration has to be done against the backdrop of the level playing field for cross-border takeovers in Europe. The request for new policy considerations has been focusing on potential changes to the contemporary European Merger Control regime. A change in the existing European Merger Control regime would need to benefit this trade-off. Provided no actual infringement or threshold is triggered, regulatory modesty should be the rule of thumb.

An alteration of the notion of control in article 3§2 of the European Merger Control Regulation will only be counterproductive. A change unnecessarily burdens private equity firms with cumbersome and time-consuming pre- and post-notification procedures, despite the availability of a simplified procedure. Given the current macroeconomic circumstances, cumbersome procedures can drive off private equity players to new emerging markets outside of the EU. New emerging markets like India and China are already attracting private equity players due to favorable investment conditions. In addition, an increase in the scope of EMCR would extensively increase the workload of the already understaffed Commission.

Finally, in some jurisdictions private equity players are exempted from merger control. This legal exemption is based on the fact that private equity firms normally use voting rights only for investment purposes. Such a general exemption already exists under the Dutch competition law framework. The study of the International Competition Network, considering the Dutch system as an exemplar, argues in favor of a European variant of the Dutch exemption rule for private equity firms (see sections 32–33 of the Dutch Competition Act). These sections exempt "control by private equity companies insofar as the voting rights are only exercised for investment purposes" (Nederlandse Mededingingsautoriteit 2011). Under the European merger control framework such an exemption does not exist. As soon as private equity players start to exercise voting rights of the acquired company they fall under the EMCR regime

(see article 3§5). Finally, it is important to look at alternative measures to deal with private equity cross-border takeovers.

Summary and Conclusions

Private equity investors, who are also known as short-term value creators, were introduced to the world of competition law in this chapter. There is an increasing trend among these funds to consort in the auctions of large publicly traded target companies. Private equity players clinching together in consortia have raised competition concerns.

Consorting private equity firms are supposed to decrease the number of bidders on the bidding markets and would therefore lower the bidding prices (monopsony setting). In addition, private equity consortia share sensitive information to influence the bidding process (referred to as bid-rigging).

In the case of EMCR, European Commission decisions have showed that private equity funds usually operate below the thresholds of the regulation and are therefore exempted from cumbersome prenotification procedures. Furthermore, in the light of article 101§1 TFEU (formerly article 81 EC) I examined whether private equity players were likely to collude and therefore infringe rules of competition law. A comparison was made between case law, including bid-rigging fraud in the public procurement sector, and the recent European Court of Justice approach on the issue. Factors and circumstances present in the public procurement sector were not likely to occur in the private equity (takeover) industry.

Based on this analysis, I asked whether the promulgated competition concerns related to private equity consortia were really genuine. The monopsony scenario is not likely to occur. On the contrary, collusion among private equity players may lead to greater levels of competition. Besides, the monopsony theory is grounded on the assumption that consortium members would have bid individually. This is not necessarily the case for reasons of liquidity and scale.

Thus closer scrutiny brings us to the conclusion that there is no need for concern. Growing consortia absorbing vast chunks of corporate Europe is not likely to become reality. Macroeconomic circumstances bring a natural balance between private equity and conventional strategic players. Armour and Chefians (2008, 58) plainly describe this:

> We predict that despite the seemingly inexorable rise of private equity, matters will work out differently than current trends imply. One possibility is that the private equity industry could suffer the same fate as the conglomerate, namely a reversal of dramatic growth followed by partial retreat. The experience with conglomerates is instructive since 1960s conglomerates, as with leading private equity firms today,

> bought and ran large numbers of companies in diverse industries, developed an enthusiastic following among investors, were characterized as capitalist trend-setters and were politically controversial.

Armour and Chefians (2008, 59) continue:

> Just as Jensen was predicting the eclipse of the public corporation, a combination of deteriorating debt markets, a dearth of suitably priced targets and regulatory changes put public-to-private buyout activity in a "deep freeze" that lasted more than a decade. The pattern could repeat itself with private equity. Currently, the environment for private equity buyouts is close to optimal. Stock markets are buoyant enough to provide an exit option, debt is both cheap and plentiful, targets have been available at reasonable prices and regulation has done little to deter public-to-private buyouts. Conditions could, however, change rapidly. Market turbulence could foster a drop in stock prices and a credit crunch. "Pushback" by directors and shareholders could drive up the prices of buyout targets. For private equity, a prolonged period in the political limelight could result in an unfavourable regulatory terrain for public-to-private buyouts. A combination of these adverse circumstances might well marginalize private equity in the same way as occurred in the 1990s.

It is in the nature of private equity funds to use small portions of their own investors' money (equity) in their investments, and they tend to diversify to spread portfolio risks. The syndication of private equity is therefore merely a result or consequence of basic principles of efficiency and cost diversification. Competition concerns that have arisen about private equity consortia are therefore imminent. To formulate a future policy approach on the issue at hand, empirical research is required on the private equity syndication. Meuleman et al. (2009) have already provided a portion of the required data. This chapter formed a primer for future research on club deals. Needless to say, however, there is no indication that the current presence of club deals on the European markets will ipso facto bring about vehement practices of illicit bid rigging.

Acknowledgment

I am grateful to professor Pierre Larouche for his comments on earlier versions of this chapter.

Note

1. Standard European Court of Justice case law here are, respectively, case C-49/92 *Commission v Anic Partecipazioni* [1999] ECR I-4125; Case C-199/92 *P Hüls v Commission* [1999] ECR I-4287; *Suiker Unie and Others v Commission* [1975] ECR 1663;

Consten and Grundig v Commission [1966] ECR 299, 342; Case C-105/04 *Nederlandse Federatieve Vereniging voor de Groothandel op Elektro-technisch Gebied v Commission* [2006] ECR I-8725; *Deere v Commission*; Case C-194/99 *P Thyssen Stahl v Commission* [2003] ECR I-10821.

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PART IV

REAL EFFECTS OF PRIVATE EQUITY

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CHAPTER 10

THE REAL EFFECTS OF PRIVATE EQUITY BUYOUTS

JOACIM TÅG

Private equity buyouts are acquisitions of established companies undertaken by private equity firms. They are partly financed with debt and partly with equity raised from institutional investors for private equity funds with a predetermined life span. Private equity buyouts are also known as leveraged buyouts or bootstrap acquisitions. When management participates, they are sometimes called management buyouts.

The private equity industry took off during the 1980s. As a large wave of takeovers swept across the United States, buyouts became a new phenomenon that was much talked about and scrutinized. When the takeover wave receded at the end of the 1980s, so did the number of buyouts. But as illustrated in Figure 10.1, it took only three years for buyouts to make their comeback and break new records by spreading out from the United States. During 2000 to 2007 a worldwide explosion in the number of buyouts occurred, and a staggering 79 percent of all buyouts between 1970 and 2009 took place after 1999. In particular there has been an increase in the number of buyouts outside the United States and the United Kingdom. As illustrated by Figure 10.2, at the peak of the boom in the 1980s, 93 percent of all buyouts took place in the United States or the United Kingdom. At the peak of the boom in the 2000s, 53 percent of all transactions took place in the United States or the United Kingdom.

The spread of the buyout phenomenon has not escaped criticism (FSA, 2006; ITUC, 2007; PSE, 2007). Labor unions and worker representatives claim that buyouts, through layoffs and wage cuts, generate returns to investors at the expense

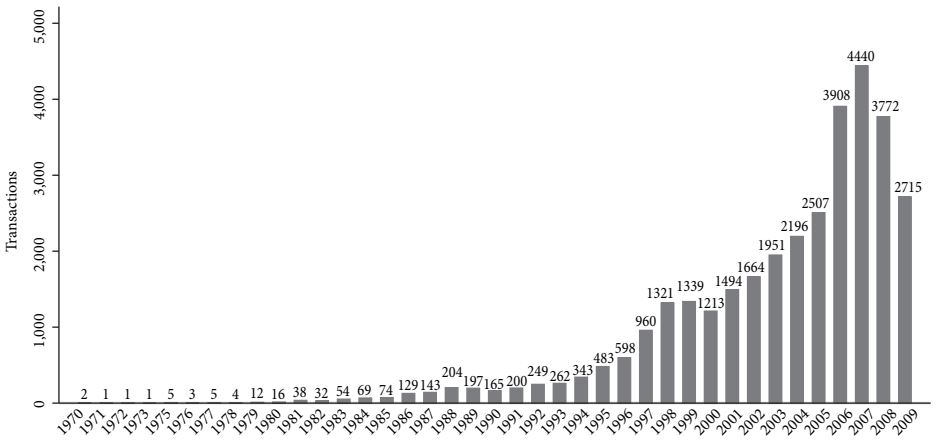

Figure 10.1 Number of closed or effective transactions worldwide from January 1, 1970, to December 31, 2009, in the Capital IQ database that are marked as LBO or MBO. For a careful discussion on the coverage of the Capital IQ database, see Strömberg (2008).

of workers. Industry critics express some concern about the detrimental effects of short holding periods by citing examples of "quick flips," in which companies are sold off within two years after the buyout.

This has prompted the view that private equity firms are short-term investors that are always on the lookout for a quick exit at the expense of employees, productivity, and long-run investments. The private equity industry has not sat idle. Responding with studies of its own, its interest organizations have refuted the accusations and claimed that buyouts create better companies, increase job creation, and promote long-term productivity (Achleitner and Klöckner, 2005; BVCA, 2006).

But why should a buyout affect employment, productivity, and long-run investments? And what are the empirically documented effects? This chapter offers an answer by drawing on a literature in economics and finance stretching back to the 1980s, when the industry first emerged. Throughout, the emphasis is on real effects, omitting such aspects as the effect of a buyout on operating profitability, returns to investors, and tax payments. Studies that cannot separate the effects of venture capital from private equity investments are also omitted.

The real effects are important since a buyout has the potential of affecting static efficiency (e.g., productivity), dynamic efficiency (e.g., innovation) and imposing (positive or negative) externalities on stakeholders in the firm (e.g., the employees). Empirical and theoretical studies on employment, wages, productivity, innovation, and bankruptcy provide us with hints on what the social welfare implications of an active private equity market are likely to be.

In sum, the literature has discussed several reasons why a private equity buyout could have real effects. They can be grouped into three categories: a buyout reduces agency problems, it introduces uncertainty and temporary owners, and it brings in capital and knowledge to the organization. These changes affect employees, productivity, and long-run investments.

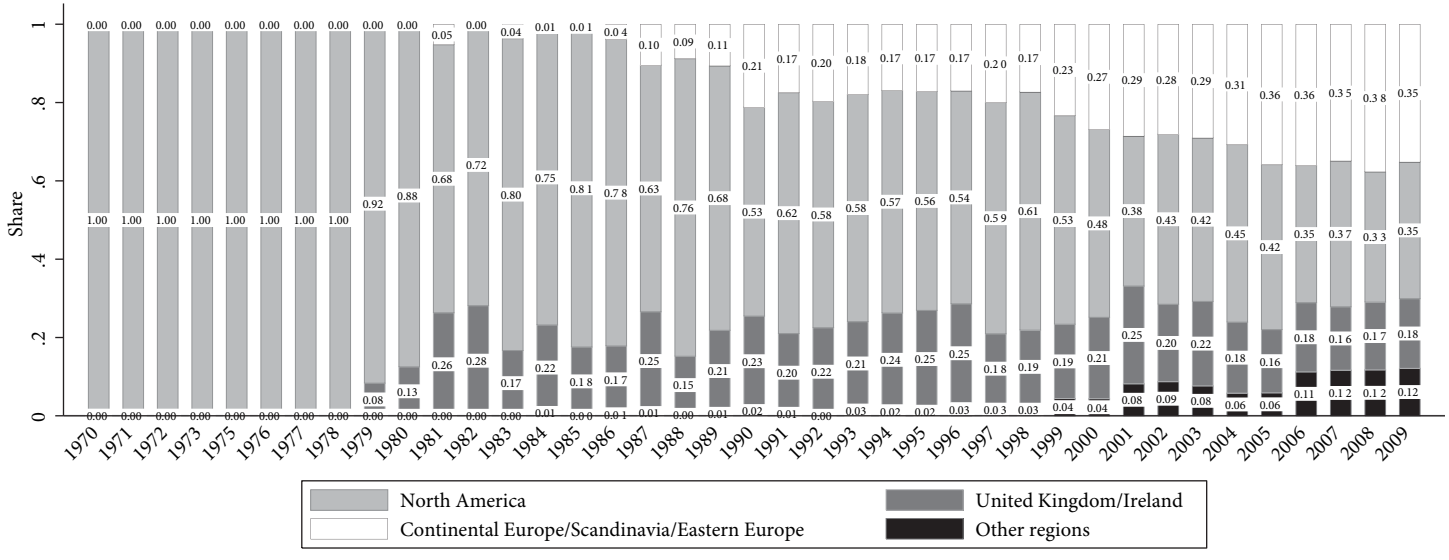

Figure 10.2 Geographical breakdown of the number of closed or effective transactions worldwide from January 1, 1970, to December 31, 2009, in the Capital IQ database that are marked as LBO or MBO. For a careful discussion on the coverage of the Capital IQ database, see Strömberg (2008).

Reducing agency problems realigns the incentives between managers and owners and can lead to reductions in employment and increases in productivity as the effects of empire building become undone. The same effects can be expected from increased uncertainty and new owners as it becomes easier to breach implicit contracts and implement changes in the organization. Temporary ownership can increase incentives to improve productivity as private equity–backed firms maximize an exit valuation and thus take actions to increase the bidding competition in case of a trade sale. But temporary ownership can also lead to a short-term focus negatively affecting long-run investment. Finally, additional capital and better knowledge of management practices are important. A capital injection can spur the growth of the firm (or a division of a firm taken private), leading to increases in employment and new investments, and improved knowledge of operational management practices can lead to increases in productivity.

In broad terms, the empirical evidence is consistent with these predictions. Most (but not all) empirical evidence suggests declines in employment, increases in productivity, and small or no effects on long-run investments. While studies on productivity agree on positive effects, the effects on employment and long-run investments are mixed. No evidence of dramatic increases in the bankruptcy rate exists. In general the evidence is consistent with buyouts leading to a reallocation of resources to more productive uses. As expressed by Davis et al. (2008), private equity firms are catalysts of creative destruction.

Despite a growing literature on the real effects of buyouts, more research remains to be done. So far there is no formal theoretical foundation for the real effects of buyouts, and more work is needed on determining the sources of static and dynamic efficiency changes postbuyout. Future researchers should also delve further into disentangling the effect of private equity ownership from the effect of ownership change, and figure out if the real effects have changed over time or if they differ between the types of buyouts undertaken. Finally, as most empirical evidence is from the United States or the United Kingdom, we have little knowledge of how the real effects vary across countries, and if they do, why this is the case.

This chapter is organized as follows. It starts with a discussion of why buyouts have real economic effects and then surveys the empirical literature on the relation between buyouts and employment, productivity, long-run investments, and bankruptcy. It ends with a discussion of further research and a summary of the findings.

Why Can a Buyout Have Real Effects?

Although few formal analyses exist, and only some authors explicitly discuss real effects, the literature on private equity buyouts provides a good basis for a discussion on the real effects of buyouts. The ways a buyout can have real effects can

be grouped into three categories: a buyout reduces agency problems; it introduces uncertainty and temporary owners; and it brings in new capital and better knowledge of management practices.

A Buyout Reduces Agency Problems

In foundational papers on the role of buyouts, Jensen (1986, 1989) argued that private equity firms—or leveraged buyout associations—are an organizational form superior to the public corporation as it is designed to reduce agency problems between dispersed owners and the manager of the firm (Berle and Means, 1932: Jensen and Meckling, 1976). Dispersed ownership allows managers to avoid hard and unpopular tasks such as firing employees, reducing wages, and negotiating lower prices with suppliers. Without careful monitoring and the right incentives, managers can engage in empire building by hiring too many employees, acquiring too many companies, or diversifying activities too much (Jensen, 1986; Williamson, 1964). Jensen (1986, 1989) argued that a buyout could reduce these problems since private equity firms concentrate ownership, implement a close connection between pay and performance, and increase leverage.

Concentrating ownership is central, since dispersed ownership in a public corporation is accompanied with low incentives to monitor the manager. Monitoring the manager is a public good, and shareholders have incentives to free-ride on each other (Berle and Means, 1932; Williamson, 1964; Shleifer and Vishny, 1986). A buyout concentrates ownership and thereby removes the free-riding problem. Once the free-riding problem is gone, problems with low performance and empire building can be dealt with by implementing compensation contracts tying performance to pay and by increasing leverage.

Compensation contracts tying performance to pay align the interests of owners and the manager and can thereby lead to improvements in productivity (Jensen and Meckling, 1976; Holmström, 1979; Jensen and Murphy, 1990). Alignment can also be achieved by the manager's receiving ownership in the firms or by her being required to invest in the firm. Increased managerial ownership also has other benefits. Under asymmetric information, it can lead managers to reveal information to the owners they would otherwise not have disclosed (Opler and Titman, 1993; Lazear, 2005). Moreover if the manager is required to take a large stake in the company and refuses, it signals that she might not have disclosed all relevant information about the firm.

Increased leverage can help reduce agency problems as, apart from financing the transaction, it forces the manager to pay out "free cash flows" (Murphy, 1985; Jensen, 1986). Free cash flow is money left in the firm after all projects with a positive net present value have been funded. Increasing leverage is a way of forcing the manager to return free cash flow to the owners instead of investing the funds in projects with a negative net present value. Increased debt also makes the probability

of default and managerial turnover larger and therefore leads to increased efforts by the manager (Grossman and Hart, 1982; Zwiebel, 1996). Moreover when combined with ownership in the firm, debt increases the pay sensitivity of the manager, making her more likely to operate in the interests of the owners.

The changes in ownership concentration, managerial ownership, and leverage are likely to have real effects. If dispersed ownership, a weak connection between pay and performance, and too low leverage allowed the previous management to hire too many employees and diversify operations too much, a buyout can have real effects by reversing the damage done and thereby lead to a decrease in employment and an increase in productivity.

The increase in leverage can also have a negative impact on long-run investment and employee wages. There exists evidence of a negative correlation between R&D spending and leverage (Himmelberg and Petersen, 1994), and increased leverage gives more bargaining power to the firm in wage negotiations. The firm can credibly threaten not to undertake new investments unless wages are reduced, as argued by Perotti and Spier (1993). In addition too much debt can lead to debt overhang, resulting in reduced investment incentives (Myers, 1977). Finally, increased leverage can lead to an increased risk of bankruptcy and, in the extreme, a full shutdown of operations.

A Buyout Introduces Uncertainty and New Temporary Owners

Besides reducing agency problems, a buyout introduces uncertainty and temporary owners. Schaefer (1998) argues that it can be easier to change compensation structures and improve productivity by moving people to new positions within the organization when employees feel less secure in their jobs.

The ownership change itself may also be important. Shleifer and Summers (1988) argue that an ownership change makes it easier to breach implicit contracts with workers, suppliers, and other stakeholders. An entrenched manager facing a difficult situation could also have a harder time letting employees go or shifting resources to more productive uses than if he were to be replaced by a new manager as a result of the ownership change. Replacing the manager is easier if an ownership change takes place. As argued by Cuny and Talmor (2007), new owners have the advantage of not having a close relationship with the manager, which allows them to consider all turnaround possibilities, even those that involve replacing the manager.

The new owners are also temporary owners. The median holding period of a company is six years, according to Kaplan and Strömberg (2009). As temporary owners, they could face different incentives to undertake long-run investments and restructuring activities as compared to more permanent owners.

A reduction in long-term investments can be a concern in "quick flips" (deals in which the holding period is shorter than two years). These deals are profitable.

Using a data set of around 7,500 investments of 250 private equity firms worldwide from 1971 to 2005, Lopez-de-Silanes et al. (2009) show that short holding periods (less than two years) generated an average IRR (internal rate of return) of 79 percent, in comparison to an IRR of 10 percent for investments held longer than four years. Incentives to perform quick flips thus exist, and it is easy to imagine that long-run investments could be sacrificed for more short-term gains. An argument against this, however, is that the eventual buyer will care about the long-run value of the firm and thus temporary owners should have no incentives to sacrifice long-run investments for short-run gains as this would depress the exit valuation of the target firm.

Temporary ownership can also lead to increased incentives to improve productivity. Norbäck et al. (2010) argue that if buyouts take place in concentrated industries and are exited through trade sales, private equity firms maximizing trade sale revenues have stronger incentives than more permanent owners to ensure the management team works hard at restructuring the firm. The intuition is that the possible buyers are willing to pay for the restructured assets and to prevent a rival from obtaining them. The more productive the assets are, the more valuable it is for bidders both to obtain the assets and to prevent a rival from obtaining them. Since permanent owners do not maximize trade sale revenues, temporary ownership should lead to relative increases in productivity.

A Buyout Brings in Capital and Knowledge

Additional capital and improved knowledge of management practices have the potential of leading to increases in employment, productivity, and long-run investments. Boucly et al. (2011) argue that in some environments, buyouts can be a good substitute for other sources of capital and thereby increase employment growth. The authors support their argument using data for 830 buyouts in France during 1994–2004 by showing that the strongest employment growth is observed in industries where external financing is often needed for growth.

A buyout can also be a way for a capital-constrained division manager to secure financing for taking the division private (if the company is interested in selling it). This motivation for buyouts has been discussed in the management literature (Fox and Marcus, 1992; Zahra, 1995; Wright et al., 2000, 2001). The main argument is that buyouts help entrepreneurial managers escape the bureaucracy of large corporations. Empirical support for this argument is given in Fidrmuc et al. (2008). They study a sample of 221 U.K. public-to private transactions completed between 1997 and 2003. They show that management buyouts take place without the help of private equity firms if management can itself reap the benefits of the deal, but that management brings in private equity firms when the firm has less cash, the manager holds a smaller equity share, and the firm is large—exactly when additional external capital is needed.

Alleviating credit-constrained managers in divisional (management) buyouts can have a positive effect on long-run investments. For example, Gertner et al. (1994) argue that internal financing of a project can reduce innovation incentives because the firm controls the project and can extract rents from a manager ex post. External financing then improves the innovation incentives. Gromb and Scharfstein (2002) argue that internal development of a project can come with costs, as a manager in charge of the project can be redeployed inside the firm if the project fails. This reduces the incentive to work hard on the innovation. Outside development, on the other hand, makes the manager work harder as he is forced to find a new job if the project fails. Hellmann (2007) also presents a multitask model, arguing that in equilibrium employees sometimes leave the firm and develop an innovation externally because the firm wants the employee to focus on its core tasks instead of spending time on developing new innovations.

Private equity firms also bring with them knowledge about management practices. This could lead to improvements in productivity. Using data on management practices in around 4,000 medium-size manufacturing firms worldwide, Bloom et al. (2009) show that private equity–backed firms are, on average, better managed than privately owned firms, family firms, or government-owned firms. The reason is a lack of a "tail" of badly managed firms; almost all private equity–backed firms have good management practices. They also show that private equity–backed firms tend to be particularly good at operational management practices, suggesting that a buyout can have a positive influence on productivity by bringing in good knowledge of management practices.

In sum, there are multiple reasons a buyout can have real effects. While the effects on employment and long-run investments could go either way, most arguments favor increases in productivity.

What Are the Empirically Documented Effects?

Empirical studies on the real effects have found evidence consistent with the above discussion. Most empirical studies, but not all, have found that a buyout is correlated with increases in productivity, weakly negative or no effects on employment, weak increases in wages, and small or no effects on long-run investments. There are no effects on the bankruptcy rate, although it varies over time and across countries. This evidence is summarized in Table 10.1.

Table 10.1 Academic Studies on the Effects of Private Equity Buyouts on Employment, Productivity, and Innovation

Author	Sample Description	Time Span	Country	Data Source	Method of Analysis	Employment	Productivity	Innovation
Amess (2002)	78 management buyouts (MBOs) paired with 2 control firms, each matched on inputs	1986–1997	U.K.	CMBOR; Onesource	LSDV regression	–	A 16.13% Hicks-neutral improvement in output. Marginal value added from labor increased by 32%, but marginal value added from capital fell by 75%	–
Amess (2003)	78 MBOs paired with 2 control firms, each matched on inputs	1986–1997	U.K.	CMBOR; Onesource	Stochastic production frontier for both a Cobb-Douglas and translog specification, and a two-way fixed-effect inefficiency model	–	MBOs have higher efficiency two years prior to the transaction and higher efficiency of 7%, 7.5%, 4%, and 7% higher in each of the four years postbuyout	–
Amess and Wright (2007)	1,350 manufacturing MBOs, control group of 4,029 firms matched on 4-digit SIC 4	1999–2004	U.K.	CMBOR; FAME	Logistic regression, multinomial logistic estimation, and simultaneous SLS regression	Overall no employment effects for MBOs and MBIs combined, but employment growth is 0.51 percentage points higher for MBOs and 0.81 percentage points lower for MBIs. Wage growth is 0.31 percentage points lower for MBOs and 0.97 percentage points lower for MBIs	–	–

(*continued*)

Table 10.1 (continued)

Author	Sample Description	Time Span	Country	Data Source	Method of Analysis	Employment	Productivity	Innovation
Amess et al. (2007)	Matched employer-employee sample of 1,959 firms and 27,263 employees	1998	U.K.	U.K. Workplace Employee Relations Survey	Random effects ordered probit regression	Employees' discretion over their work practices is higher in MBO firms, particularly for craft and skilled service employees. For these employees, supervision is also lower	–	–
Amess et al. (2008)	232 LBOs (divided into MBOs, management buyins [MBIs], and private equity) and 215 firms subject to acquisitions; control sample of 23,468 firms	1996–2006	U.K.	CMBOR; Zephyr; FAME	Multinomial probit regression and difference-in-difference models	Private equity–backed LBOs have no significant impact on employment or wages	–	–
Bergström et al. (2007)	73 LBOs.	1993–2006	Sweden	Swedish Companies Registrations Office; Mergermarket; Factiva; Orbis; Affärsdata	Calculation of Z- and J1-statistical OLS regression	No significant effects on employment or wages	–	–

Bernstein et al. (2010)	14,300 LBO transactions worldwide and industry data across all OECD countries	1991–2007	OECD countries	Capital IQ; OECD's Structural Analysis Database (STAN)	OLS regressions with country and industry fixed effects	Industries that have received private equity investments for the past five years have grown more quickly than other industries in terms of employment. There is no significant difference between industries with low or high intensity of private equity investment	Industries that have received private equity investments for the past five years have grown more quickly than other industries in terms of total production and value added. There is no significant difference between industries with low or high intensity of private equity investment	–
Boucly et al. (2011)	830 LBOs; 3,913 control firms chosen to match the LBOs on industry, employment, and return on asset	1994–2004	France	SDC Platinum; Capital IQ; BRN	OLS regression with fixed effects for time and firm	LBO targets have a total employment growth that is around 13% higher than controls over the period of three years prebuyout to four years postbuyout	–	–
Bruining et al. (2005)	145 buyouts in the U.K. and 45 buyouts in the Netherlands	1992–1998	U.K./Netherlands	CMBOR; Survey	Z-test of proportions, t-test for equality of means, and Levene's F-test for equality of variances	HR practices are improved after an LBO. Training, employee involvement, and the number of employees all increase. Effects stronger in the U.K. as compared to the Netherlands	–	–

(*continued*)

Table 10.1 (continued)

Author	Sample Description	Time Span	Country	Data Source	Method of Analysis	Employment	Productivity	Innovation
Cressy et al. (2011)	57 buyouts and a control group of 83 matched companies	1995–2002	U.K.	Venture Expert; FAME	Heckman regression analysis, log-linear regressions	Employment falls by 7% in the first year postbuyout. Total employment reduction is 23% over the first four years, but employment increases in the fifth year following the buyout	–	–
Davis et al. (2008)	4,500 U.S. firms (operating 300,000 establishments) that underwent an LBO and 1.4 million control establishments	1980–2005	U.S.	LBD; Capital IQ; Dealogic; SDC	Comparing differences, OLS regressions	Average cumulative two-year relative employment decline of 7% on establishments remaining with the firm. For a smaller sample of firms they can follow for two years posttransaction, a two-year cumulative relative 6% increase in job creation from the creation of new establishments	–	–
Davis et al. (2009)	1,400 U.S. manufacturing firms (operating 14,000 establishments) that underwent an LBO	1980–2005	U.S.	ASM; LBD; Capital IQ; Dealogic; SDC	OLS and logit regressions	Wage premium for target establishment workers of 1.1% relative to controls at the time of the buyout, but it has disappeared two years later	Productivity grows 2% more at targets than at controls over two years following the transaction. Labor productivity is 5.2% higher. Two-thirds of the productivity improvement comes from continuing establishments, one-third from new establishments	–

Hall (1990)	250 LBOs	1959–1987	U.S.	Compustat files (Standard & Poor's)	Regression analysis, Wilcoxon test for differences	–	–	Acquisitions with high leverage tend to reduce the R&D intensity, but this is not true for LBOs
Harris et al. (2005)	979 MBOs (with 4,877 plants); total sample (including controls) of 35,752 establishments	1994–1998	U.K.	CMBOR; IDBR	Arellano-Bond GMM	–	Total factor productivity increases by 70.5–90.3% relative to controls. Prebuyout total factor productivity at targets is lower by 1.6–2.0%	–
Kaplan (1989)	48 MBOs	1980–1986	U.S.	COMPUSTAT; Standard & Poor's Daily Stock Price Record	Comparing statistics	Median employment increased by 0.9%, but in relation to the industry median. MBO firms have 12% lower job growth	–	–
Lerner et al. (2011)	495 LBOs	1980–2005	U.S.	Capital IQ; Dealogic; SDC VentureXpert	Poisson regression and negative binomial estimation (both with and without random and fixed effects), OLS with fixed effects, and univariate tests of differences	–	–	LBOs do not lead to lower patenting intensity or a shift in patenting direction. However, the quality of patents increases and the patent portfolio becomes more focused

(*continued*)

Table 10.1 (continued)

Author	Sample Description	Time Span	Country	Data Source	Method of Analysis	Employment	Productivity	Innovation
Lichtenberg and Siegel (1990)	Over 12,000 manufacturing establishments, 1,108 of which were involved in an LBO or MBO (36% are MBOs)	1983–1986	U.S.	LRD; ASM; *New York Times, Wall Street Journal*	WLS regression, Kruskal-Wallis test for differences in medians	Cumulative employment declines for white-collar workers 8.5% over 3 years and relative cumulative increases in blue-collar wages of 3.6%. Employment is unchanged for blue-collar workers	LBO targets have a median increase in productivity of 5.9% as compared to controls 1 to 3 years post-LBO. Targets gave higher a productivity of 2.3% 1 to 3 years before the buyout	No significant effect on R&D spending. Target plants are less R&D-intensive (2.5% lower in mean 1 to 3 years before the buyout) and are concentrated in less R&D-intense industries
Long and Ravenscraft (1993)	72 LBOs with R&D and 126 with no R&D; 3,329 non-LBO firms as controls	1981–1987	U.S.	NSF; QFR	OLS regressions	–	–	Lower R&D in targets pre-LBO (by around 50% less than the median). LBOs cause R&D intensity to drop by roughly 40%. The effect is more pronounced in small firms. R&D-intensive LBOs outperform their industry peers and non-R&D-intensive LBOs
Muscarella and Vetsuypens (1990)	72 firms that were publicly held, underwent an LBO, and then once more went public (IPO)	1983–1987	U.S.	COMPUSTAT; investment banks; Wall Street Journal Index; Dow Jones News Retrieval Service	Comparing statistics	A decline in employment of 0.6% between the time of the buyout and once more going public	–	–

Opler (1992)	44 public-to-private LBOs	1985–1989	U.S.	1990 Forbes Private 400; Compact Disclosure; Moody's Industrial Manual; COMPUSTAT II PST; FC	Wilcoxon signed rank tests	No significant effects on employment	–	No significant effects on R&D expenditures
Smith (1990)	58 MBOs	1977–1986	U.S.	COMPUSTAT; Marais et al. (1989); Mergerstat Review	Comparing statistics, Wilcoxon signed rank test	Weak declines in employment (significant at the 10% level)	–	No effects on R&D spending
Ughetto (2010)	681 Western European manufacturing firms subject to a buyout (private to private deals).	1998–2004	Western Europe	VentureSource; Venture Expert; Amadeus; Delphion (EPO patent data)	Wilcoxon signed rank tests, logistic regressions	–	–	Patenting intensity increases postbuyout (average number of patents increases by around 50% from 1.06 to 1.59). The characteristics of the LBO affect patenting intensity: syndicated deals, a buyout-specialized lead investor, a lead investor with a large portfolio of companies tend to be correlated with greater increases in patenting intensity. Geographical proximity and location do not seem to matter

(*continued*)

Table 10.1 (continued)

Author	Sample Description	Time Span	Country	Data Source	Method of Analysis	Employment	Productivity	Innovation
Weir et al. (2008)	122 public to private buy-outs.	1998–2004	U.K.	Hand-collected; CMBOR database	Wilcoxon signed rank tests	LBO targets experienced job losses in the two years following the LBO, but employment then increased relative to firms remaining public in years 4 and 5	–	–
Wright et al. (1992)	182 LBOs	1983–1986	U.K.	Authors' own survey; CMBOR database	Comparing answers from questionnaires	Initial decline in employment of 6.3% that recovers over time to 4.5% of the prebuyout level	–	Increase in new product development: 62% reported this was because of buyout
Zahra (1995)	47 MBOs of manufacturing firms in the U.S. south and south west.	1994	U.S.	Interviews augmented with secondary data	MANCOVA, ANCOVA, and multiple regression analysis	–	–	No effects on R&D spending, but MBO firms increased the commitment to corporate entrepreneurship. Product development, technology-related alliances, and new business creation activities tend to increase

Notes: Acronyms used in the table are CMBOR, Centre for Management Buy-Out Research; OECD, Organisation for Economic Co-operation and Development; IDBR, Inter-Departmental Business Register; NSF, National Science Foundation; QFR, Quarterly Financial Report; LRD, Longitudinal Research Database; ASM, Annual Survey of Manufacturers and QFR - Quarterly Financial Reports.

Employment and Wages

Perhaps the most controversial issue regarding buyouts is the effect of a buyout on employees. While labor unions are often quick to point out examples of large layoffs following a buyout, private equity associations often underscore that targets tend to grow in size after the buyout. Empirical studies on the employment effects of buyouts have, on average, found no or weakly negative effects on employment and slight positive effects on wages. The exception is France, where buyouts have a strong positive effect on employment.

Evidence from the United States suggests that employment effects are weakly negative. Kaplan (1989) studies a sample of forty-eight large management buyouts that took place between 1980 and 1986 and finds that median employment increased by 0.9 percent if divestures are counted as job losses. In relation to the industry median, however, firms subject to a buyout have a 12 percent lower job growth. Not counting firms that divest more than 10 percent of the buyout value—leaving a sample of twenty-six firms—the median job growth is 6.2 percent slower than the industry median. This is similar to the findings of Muscarella and Vetsuypens (1990), who study a sample of seventy-two U.S. firms that underwent a leveraged buyout and subsequently went public between 1976 and 1987. They find a decline in employment of 0.6 percent between the time the buyout took place and when the firm went public. This is lower than for the comparison group, and it can be attributed to divestures; they find an increase in median employment by 17 percent for the twelve firms that did not do divestures. Leveraged buyouts between 1986 and 1989 could have had less of an effect on employment. Opler (1992) studies forty-four public-to-private leveraged buyouts and finds no significant employment effects of the buyout.

A drawback of using firm-level data is the difficulty in separating out employment effects arising from organic growth from those arising from acquisitions and divestitures. Plant-level studies can distinguish between these effects.

Lichtenberg and Siegel (1990) gather plant-level data on 1,108 plants that underwent a leveraged buyout or a management buyout between 1983 and 1986. Their total sample, including the comparison group, is on around 12,000 manufacturing plants observed between 1972 and 1986. They find a cumulative decline in white-collar employment of 8.5 percent over three years (one year pre- and two years postbuyout). However, blue-collar employment declines are not statistically significant. Hence the main employment effect is on white-collar workers: the ratio of white-collar to blue-collar workers declines by 6.5 percent relative to the industry average. In addition they find a cumulative three-year (one year pre- and two years postbuyout) relative increase in blue-collar wages of 3.6 percent for annual wages and 2.3 percent for hourly wages. This indicates that job creation and job losses do not occur with the same intensity up and down the corporate hierarchy. White-collar workers draw the shortest straw.

Using more recent and comprehensive plant-level data, Davis et al. (2008) collected a data set of around 300,000 U.S. establishments operated by about 4,500 firms subject to a leveraged buyout between 1980 and 2005. Comparing with a

control group at the establishment level matched on industry, age, and size, they find an average cumulative two-year relative employment decline of 7 percent at target establishments remaining with the firm. They also find slower employment growth at target establishments before as well as after the buyout, suggesting that buyouts of quickly growing firms are not common. Gross job creation is similar between the comparison group and targets, so it is likely that job destruction at target establishments is driving the results. But the decrease in employment at remaining establishments is partly offset by the creation of new establishments. For a smaller sample of around 1,300 transactions, they show that target firms tend to create more new establishments. This leads to a two-year cumulative relative 6 percent increase in job creation. Continuing their work using a data set on 1,400 manufacturing firms subject to a leveraged buyout between 1980 and 2005, Davis et al. (2009) show that continuing establishments at targets pay workers a wage that is 1.1 percent higher than continuing establishments in the comparison group around the time of the transaction. However, this difference disappears two years after the transaction. Thus U.S. evidence suggests negative effects on employment, but positive wage effects for employees remaining with the target.

Evidence from U.K. buyouts is similar, although somewhat weaker. Wright et al. (1992) study a survey sample of 182 leveraged buyouts at the firm level for 1983–1986 and conclude that postbuyout an initial decline in employment of around 6.3 percent occurs. It recovers over time to 4.5 percent below the prebuyout level. Amess and Wright (2007) study a sample of 1,350 management buyouts and management buyins observed at the firm level between 1999 and 2004. They find no correlation with changes in employment or wages, but they do find a slight decrease in wages relative to the comparison group. They also find heterogeneity in the employment effects between buyins and buyouts. Management buyins tended to have a relatively lower employment and wage growth than management buyouts.

No aggregate effects on employment are in line with Amess et al. (2008), who show, using a sample of 232 leveraged buyouts observed between 1996 and 2006, that private equity–backed buyouts have no effect on employment or wage growth relative to the comparison group. However, Cressy et al. (2011) study a sample of fifty-seven buyouts matched with eighty-three comparison firms for 1995–2002 and find that over the first postbuyout year, employment falls by 7 percent relative to the comparison group. This grows to 23 percent below that of the comparison group over the first four years. In year 5, employment increases relative to the comparison group. This is similar to evidence from Weir et al. (2008), who studied 122 public-to-private buyouts between 1998 and 2004 and found job losses for the first two years after going private, but subsequent increases in years 4 and 5 as compared to firms remaining public.

Evidence on employment effects beyond the United States and the United Kingdom is scarce. Buyouts in Sweden have no effect on employment and wages, at least according to Bergström et al. (2007), who use a sample of sixty-nine buyouts between 1993 and 2005. The evidence from France is drastically different. Boucly et al. (2011) study 830 buyouts in France that took place between 1994 and 2004.

Compared to the comparison group, they find a remarkable employment growth of 13 percent in the period three years before the transaction to four years after. They argue that most of the gains come from organic growth. This finding is in sharp contrast to studies from the United States and the United Kingdom. The authors argue that buyouts in France work as a substitute for weak capital markets and thereby help finance firm growth. At a more aggregate level, Bernstein et al. (2010) study the effect of private equity on industry performance worldwide. Using a sample of about 14,300 leveraged buyout transactions and industry data across all OECD countries, they find that from 1991 to 2007 industries that have received private equity investment in the previous five years have grown more quickly than other industries in terms of employment, total production, and value added.

Besides the employment and wage effects of a buyout, survey evidence exists on how a buyout affects worker discretion, involvement, and training. Amess et al. (2007) study a sample of 1,959 firms and 27,263 employees from the U.K. Workplace Employee Relations Survey and find that companies subject to a management buyout give craft and skilled service employees more discretion. These workers also tend to be less supervised. This suggests that management buyouts reduce hierarchical tiers and layers of middle management, consistent with the evidence from Lichtenberg and Siegel (1990), mainly showing employment declines for white-collar workers. Further, Bruining et al. (2005) study a survey sample of 145 buyouts in the United Kingdom and 45 in the Netherlands and find a positive effect on employer training and employee involvement (with the effects being stronger in the United Kingdom than in the Netherlands).

Productivity

Empirical evidence suggests that a buyout is correlated with enhanced productivity partly arising from a reorganization of operations: private equity firms tend to close low-productivity establishments and open new, more productive ones. Outsourcing of intermediate goods also allows a reduction in labor intensity, thus contributing to productivity growth.

Using U.S. data, Lichtenberg and Siegel (1990) study total factor productivity at the plant level. They find that plants involved in leveraged or management buyouts experience a substantial increase in productivity as compared to control plants not going through a buyout. The median productivity difference one to three years after the buyout is 5.9 percent. Further, plants selected for a buyout are more productive than comparable plants even before the buyout: the median productivity difference one to three years before the buyout is 2.3 percent. The gains in productivity are not related to reductions in wages, R&D, or capital expenditures. This evidence is consistent with Davis et al.'s (2009) study of a data set of 1,400 manufacturing firms operating 14,000 establishments subject to a buyout between 1980 and 2005. They find 2 percent greater productivity growth at targets in relation to the

comparison group within two years following the buyout. Labor productivity was, on average, about 5.2 percent higher. Productivity growth is divided such that two-thirds is due to productivity improvements at continuing establishments and one-third comes from productivity contributions from new establishments. Net entry of establishments happens because targets, in relation to the comparison group, are more likely to close underperforming establishments and open new ones. Davis et al. estimate that private equity transactions in their sample resulted in an additional real output of up to $15 billion in 2007—an economically significant effect.

Evidence from the United Kingdom is also available. Amess (2002) studies a firm-level sample of 78 U.K. management buyouts taking place over the period 1986 to 1997. Compared to a control sample of 156 firms matched on input characteristics, he finds that management buyouts tended to increase relative productivity in the manufacturing of machinery and equipment industry, leading to a 16.13 percent increase in output. In line with this Amess (2003) finds, using a similar data set, that the technical efficiency of firms that underwent a management buyout is higher two years before the transaction and reach efficiency levels of 7, 7.5, 4, and 7 percent in the four years following the buyout. Harris et al. (2005) gathered data for 979 management buyouts and 4,877 manufacturing establishments in the United Kingdom that underwent a management buyout during 1994–1998 and show that total factor productivity increases substantially (70.5 to 90.3 percent) relative to the comparison group (their total sample covers 35,752 establishments). The authors argue that the productivity increase is due to a reduction in labor intensity of production made possible through outsourcing of intermediate goods and materials. They also find that prebuyout total factor productivity of targets is 1.6 to 2.0 percent lower in relation to the comparison group, thus suggesting that less productive establishments are targeted for buyouts. However, this is in contrast to Lichtenberg and Siegel (1990) and Amess (2003), who find that more productive establishments are targeted for buyouts.

Long-Run Investments

The impact of a buyout on long-run investments has been studied by focusing on expenditures on R&D and patenting intensity. The empirical evidence is mixed. Studies on R&D expenditures have found both positive and negative changes following a buyout, while studies on patenting intensity show a concentration in patenting activity toward more economically significant patents and toward the firm's historical focus.

Using U.S. data Lichtenberg and Siegel (1990) find that target plants are less R&D-intensive than nontarget plants (2.5 percent lower in mean one to three years before the buyout) and that targets tend to be concentrated in less R&D-intense industries. However, relative to the comparison group they find no significant difference in R&D spending. This is consistent with Hall (1990), who studies a sample of around eighty leveraged buyouts (LBO) between 1977 and 1988 and finds that

buyouts tended to take place in industries with little R&D. She finds no large effects on R&D spending of an LBO, but reductions as a result of corporate acquisitions with high leverage. Smith (1990) studies the postbuyout performance of around fifty-eight management buyouts between 1977 and 1986, and Opler (1992) studies forty-four public-to-private leveraged buyouts between 1985 and 1989. Neither finds any negative effects of an LBO on R&D spending. Zahra (1995), who studies a survey sample of forty-seven management buyouts, does not find any effect on R&D spending. He does, however, find some evidence that there is an increase in product development, technology-related alliances, and new business creation activities. This is similar to the findings of Wright et al. (1992), who show that a full 62 percent of surveyed firms subject to a buyout in the United Kingdom reported that the buyout allowed them to develop new products they would otherwise not have developed. A negative effect on R&D expenditures is found in the work of Long and Ravenscraft (1993), who also find that leveraged buyouts tended to take place in less R&D-intense companies (roughly 50 percent less than the mean in manufacturing). Their sample consists of 72 leveraged buyouts with R&D spending and 126 leveraged buyouts without any R&D spending between 1981 and 1987 (they use a control group of 3,329 firms). The drop in R&D expenditures postbuyout is around 40 percent, but companies reducing R&D spending tended to do worse than the firms that did not.

Another measure of long-run investments is patents; evidence suggests that a buyout leads to a concentration in patenting efforts and an increase in the economic significance of patents applied for. Lerner et al. (2011) study 495 U.S. leveraged buyouts undertaken between 1983 and 2005 and link them to patents and patent citations from the U.S. Patent and Trademark Office. They find that postbuyout more "important" innovations are patented, with "importance" measured by patent citations, and the patent portfolio becomes more focused: patents tend to concentrate in patent classes where the target has had its historical focus. However, there are no effects on patent originality, generality, or quantity.

Using a cross-country sample, Ughetto (2010) studies the patenting activity of a sample of 681 Western European manufacturing firms subject to a buyout between 1998 and 2004. She finds that the average number of patents increases by around 50 percent after as compared to before the buyout. The characteristics of the leveraged buyout affect patenting intensity. In particular syndicated buyouts, buyouts with a buyout-specialized lead investor, or buyouts with a lead investor with a large portfolio tend to be buyouts where patenting activity increased the most. Geographical proximity and location do not correlate with patenting intensity.

Bankruptcy

One channel through which a buyout can have real effects is by increasing the risk of bankruptcy (due to increased leverage), and thus, in the extreme, it can lead to

a full shutdown of operations. However, no studies have found a clear connection between a buyout and an increase in the probability of a bankruptcy, although there is evidence that the bankruptcy rate varies over time and across countries.

Kaplan and Strömberg (2009) examine a sample of 17,171 buyouts undertaken worldwide between 1970 and 2007 and find that 6 percent of all deals have ended in bankruptcy or reorganization. With an average holding period of six years, this is consistent with an annual bankruptcy rate of 1.2 percent, lower than the average default rate of 1.6 percent for U.S. corporate bond issuers between 1980 and 2002. However, it is higher than the 0.6 percent bankruptcy rate for U.S. publicly traded firms (Wright et al. 2009). Boucly et al.'s (2011) study of 830 buyouts in France during 1994–2004 finds no increase in bankruptcy rates after a buyout as compared to their control group. At some point 6.1 percent of the targets and firms in the comparison group will go bankrupt. Within three years after the buyout 3.5 percent of both targets and firms in the comparison group ended up in bankruptcy.

Yet the bankruptcy rate varies with the business cycle and across countries. Kaplan and Stein (1993) study a sample of forty-one U.S. management buyouts that took place between 1980 and 1984. Only one of the deals (2 percent) defaulted. But of the eighty-three management buyouts in their sample between 1985 and 1989, a full 27 percent defaulted and almost 11 percent ended up in bankruptcy.

Lopez-de-Silanes et al. (2009) document that around 10 percent of all deals (worldwide) in their sample ended in bankruptcy, with the bankruptcy rate varying from 5 percent in Scandinavia, to 8 percent in France, 10 percent in the United Kingdom, 12 percent in the United States, and a full 13 percent in Germany. A caveat, however, is that they define "bankruptcy" as either reported bankruptcy in the Private Placement Memoranda or as a deal not giving returns to capital (which could be for other reasons than a bankruptcy).

Even if a default on debt occurs, it may not have any real effects. Andrade and Kaplan (1998) study thirty-one of the management buyouts in Kaplan and Stein (1993) that later became financially distressed (due to high leverage). They find that firms in their sample had a slight positive increase in value before they became financially distressed, suggesting that, on average, the value of the firm does not actually decline.

Where We Stand

Empirical studies have found that employment reductions tend to occur in the United States and also to some extent in the United Kingdom, but that buyouts in France contribute to job growth. Wages tend to increase slightly for blue-collar workers and for workers who remain with the firm. The empirical studies have

also found that increases in productivity seem to follow a buyout, with evidence suggesting that it arises from increased labor productivity and from closing down unproductive establishments and opening more productive ones. Outsourcing of intermediate materials and goods also provides contributions. Further, the empirical studies have found that the effect of a buyout on long-run investments is mixed. We have indications that buyouts tend to take place in less R&D-intense industries, but evidence is mixed on whether R&D spending increases or decreases. Patenting activity postbuyout seems to concentrate on more economically meaningful patents, and patenting activity seems to depend on characteristics of the deal and who the lead investor is.

But much more work remains to be done. In particular the following dimensions are fruitful avenues for further research.

First, formal economic theory on the real effects of buyouts is almost nonexistent, even though buyouts have existed since the 1980s. Increased efforts to develop a solid theoretical foundation would enhance our understanding of the role of buyouts in the economy, of the mechanisms behind externalities in a buyout, and the effects a buyout can have on static and dynamic efficiency. Further, a better developed formal framework would allow us to ask more general questions relating to the social welfare effects of buyouts. It would also be helpful in guiding future empirical work.

Second, future empirical studies should put more effort into determining the sources of changes in static and dynamic efficiency following a buyout. Studies such as Davis et al.'s (2009) are able to link the productivity improvements to closing less productive plants and opening new, more productive ones and to increases in labor productivity following a buyout. But there may be other sources. For example, apart from reorganization of establishments, an internal reorganization of employees could have productivity enhancing effects, and improvements in management practices documented in Bloom et al. (2009) may also play an important role. Studies of buyouts using matched employer-employee data sets could shed some more light on these issues.

Third, more efforts are needed in disentangling whether real effects arise because of an ownership change or because of actions taken by private equity firms. While it would to some extent be an apples-to-oranges comparison, disentangling the effects of an ownership change due to a merger from the effects of an ownership change due to a private equity buyout (in the spirit of Amess et al., 2008) would be useful for understanding the possible effects of financial buyers on the real economy.

Fourth, future work should be dedicated to asking if the real effects differ across countries, and if so, why. Most empirical studies on real effects so far have been conducted on U.S. and U.K. transactions, yet there are indications that the real effects differ across countries. For example, evidence on employment suggests that buyouts in France have drastically different effects than buyouts in the United States and the United Kingdom, indicating that country-specific factors could be important.

Fifth, more work on how the real effects of buyouts change over time and with the type of buyout undertaken would be useful. The type of buyouts undertaken and the changes implemented by private equity firms after the buyout are likely to have changed over time as the industry has evolved and become more competitive. As argued by Holmström and Kaplan (2001), there were two reasons behind the takeover wave and the emergence of the buyout industry in the 1980s. First, deregulation coupled with new information and communication technologies introduced a gap between realized performance and potential performance that was maintained due to agency problems. Second, institutional investments in capital markets grew, which facilitated the financing of takeovers aimed at improving performance. The combination of these two factors caused a wave of takeovers and the birth of buyouts. But as corporations improved governance and competition for targets increased, it is likely that private equity firms sought new ways of creating value and thriving in different institutional environments. While financial engineering (removing financial inefficiencies) and concentrating ownership to improve governance could have been the key drivers of their activities in the 1980s, the buyouts of today could be driven by other considerations more related to implementing better management practices and removing operational and strategic inefficiencies. Some types of buyouts could have stronger real effects than others. For example, Amess and Wright (2007) found different effects on employees depending on whether a management buyout or a management buyin took place, and Ughetto (2010) found ample evidence that the characteristics of the deal correlated with increases in patents after a buyout.

Concluding Remarks

This chapter has argued that a buyout is likely to have real effects. By reducing agency problems, introducing uncertainty and temporary owners, and bringing in capital and knowledge, a buyout can cause changes in employment, productivity, and long-run investments. The empirical evidence surveyed broadly suggests weak declines in employment, increases in productivity, and small positive or no effects on long-run investments. No evidence of increases in the bankruptcy rate exists. While all studies on productivity show increases in relation to the comparison group, the effects on employment and measures of long-run investments vary between studies. Thus most of the concerns of industry critics seem unwarranted. Though declines in employment growth do occur following buyouts, there is no consistent evidence on reductions in long-run investments, and ample evidence that increases in productivity follow from a buyout. Through the real effects on the companies they acquire, private equity firms seem to be an important part of the industrial development process.

The results from academic studies are useful to keep in mind, in particular when evaluating policy proposals. Yet more work is to be done on what role private equity firms fill in society as owners of assets. The real effects of private equity buyouts should prove a fruitful area for researchers for many years to come.

Further Readings

This chapter omits much of the literature on private equity as an asset class, operating performance improvements, the financial structure of private equity funds, and their fees and taxes as a source of value. For complementary overviews of the literature on buyouts covering these aspects, see Cumming et al. 2007; Kaplan and Strömberg 2009; or Wright et al. 2009.

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CHAPTER 11

BUYOUTS IN WESTERN EUROPEAN COUNTRIES: THE IMPACT ON COMPANY GROWTH AND INNOVATION

ELISA UGHETTO

During the 1980s leveraged buyouts emerged as new organizational forms in the United States, and in subsequent years they became popular in Europe too. Today buyouts represent the largest share of private equity (PE) investments in the EU. Of the €79 billion in funds that the private equity industry raised in 2007 in Europe, 60 billion (76 percent) was in fact allocated to buyouts, and €10.3 billion (13.1 percent) went to venture and growth capital (EVCA, 2008b).

Private equity–backed buyouts have been perceived historically as an efficiency tool to streamline organizational processes and decrease unit costs (Meuleman et al., 2008). Jensen (1989) argued that buyouts generate economic efficiencies through a superior governance framework, which can better align managers' incentives to those of investors and shareholders through high leverage, concentrated ownership, and monitoring. He predicted that the buyout would emerge as the dominant corporate organizational form because of the greater incentives to performance associated with it.

Despite the outlined advantages associated with buyout deals, serious concerns have been raised on their long-run effects on firms' investment strategies to the

detriment of investment in innovation and R&D (Hitt et al., 1991, 1996; Long and Ravenscraft, 1993; Hoskisson et al., 1994). This argument relies on several potential explanations (Ughetto, 2010). First, the controls arising from high leverage and financial monitoring likely limit managerial discretion and stifle flexibility and risk taking. Second, managerial energy is absorbed in the restructuring process at the expense of innovation projects. Third, private equity firms have little incentive to favor long-term investment opportunities of target companies; their rent-seeking behavior and short-term horizon cause target firms to grow fast so that they can rapidly dismiss the investment once the company value has risen (Hall, 1990). Following this view, PE funds may well promote policies that boost short-run performance at the expense of more sustained long-term growth (Lerner at al., 2008).

This conclusion, however, needs to be further investigated. The private equity industry is more substantial today than it was in the past, and buyouts continue to be a popular strategy worldwide. Also the private equity industry has undergone significant changes, such as the increased competition between and greater specialization of private equity firms (Ughetto, 2010). Furthermore in recent years buyouts have increasingly spread from more traditional industries with mature products and stable cash flows to technology-based sectors (Strömberg, 2008).

Despite the increasing role that private equity is playing in Europe, the relationship between buyouts and acquired firms' performance remains largely unexplored. Extant literature has been largely focusing on target firms' economic performance and on the new corporate governance framework arising from the new acquisition (Cumming et al., 2007). The extent to which buyouts can spur or constrain technological change is still an open question, which has not received much attention so far.

In addition there is a lack of cross-country evidence, since previous studies have mainly dealt with buyouts in the United States and, to a lesser extent, in the United Kingdom. The lack of sufficient evidence for other European economies is limiting because these countries differ in several ways (e.g., legal regimes, ownership structures, and financial systems) from the Anglo-Saxon economies. Therefore looking at Europe provides a suitable source of data, given the heterogeneity in behavior of private equity firms, the nature of buyout deals,[1] and the different countries' specificities in which companies operate (Scellato and Ughetto, 2008).

In this chapter I consider a sample of 265 buyouts carried out from 1997 to 2004, involving target companies in the United Kingdom, Italy, France, Belgium, Spain, Germany, and the Netherlands, and a control sample of 265 companies matched with the buyout group by country, industry, and size. I investigate the extent to which buyouts impact the performance of target companies in a three-year period around the deal date, and I evaluate whether such operations spur or constrain the innovation activity of acquired firms. A focus on the financial performance of firms involved in buyouts, which is typically at the heart of the literature dealing with buyouts and firm performance, is limiting because it does not consider other important dimensions, such as growth in size, productivity, and firm-level innovation activity.

I evaluate the effects of PE investments on firm growth, measured by total assets and earnings before interest, taxes, depreciation, and amortization (EBITDA),

while controlling for the endogenous nature of PE investments. In order to assess sample firms' overall innovative effort, I rely on patent counts, as well as on two indirect measures of innovation: total factor productivity (TFP) and labor productivity (LP). Patents have long been recognized as a good measure of the innovation effort of a firm. In fact an extensive body of work on the economics of technological change documents that patents reflect the quality, technological novelty, and extent of firms' innovations (see the survey by Griliches, 1990).[2] However, it is widely acknowledged that firms' innovation efforts do not simply include formalized R&D projects and translate into a patentable output, but also include organizational and incremental innovations. TFP and LP are expected to capture the complex bundle of innovation activities that take place within companies.

When looking at profitability and dimensional growth, I observe, on average, a positive and significant effect of buyouts in the years following the deal, while an equivalent pattern cannot be identified for productivity. This evidence turns out to be robust to the inclusion of industry, country, time, and ex-ante firm-level performance controls, as well as to different estimation techniques. Finally, the estimates support the view that buyouts have a negative effect on firms' patenting activity.

The remainder of the chapter is organized as follows. First I put forward some testable hypotheses in the context of prior research, then I introduce the data and provide some descriptive statistics. Next I present the econometric models used and discuss the results, before concluding and summarizing the paper.

Hypotheses

Previous literature has generally examined the relationship between buyouts and acquired firms' performances from two different perspectives. In the first, the focus has been on financial performance, captured by indicators of profitability (Cressy et al., 2007; Wright et al., 1997; Desbrières and Schatt, 2002, among the others). In the second, nonfinancial measures of productivity have been considered (Lichtenberg and Siegal, 1990; Harris et al., 2005; Amess, 2003). In contrast, relatively little research has been done examining the relationship between such changes in ownership and acquired firms' innovative efforts (Long and Ravenscraft, 1993; Wright et al., 2001; Lerner et al., 2008; Ughetto, 2010).

Overall, recent evidence shows a positive impact of this new form of corporate organization in terms of increased economic and operating performance of acquired companies (for a review, see Holmstrom and Kaplan, 2001; Cumming et al., 2007). Performance improvements following a buyout have been conventionally associated with two different explanations: they may derive from the alignment of incentives between owners and managers (Jensen, 1989) due to the constant

monitoring activity of investors (which results in lower agency costs and enhanced firm efficiency), or from the ability of private equity firms to add value to acquired companies through competent advice and network-building capacity, rather than by simply exerting downward pressure on costs and overhead (Lowenstein, 1985). Existing studies relying on accounting-based performance measures (such as turnover growth, operating results, ratio of net income to assets, and return on investment) have commonly assessed the performance of target companies after the buyout with respect to the industry average (Scellato and Ughetto, 2008). They focus on different types of buyout transactions: management buyouts (MBOs), public-to-private or private-to-private transactions, as well as the transfer of ownership affecting plants or divisions of publicly traded or independent firms (Wright et al., 1992; Cressy et al., 2007; Lichtenberg and Siegel, 1990; Amess, 2003).

In the United States evidence points to an enhanced profitability of target firms after the buyout, while for countries other than the United States, the results are more mixed. Kaplan (1989) analyzes a sample of seventy-six large buyouts that took place during the 1980s in the United States and provides evidence of a net increase of net income and cash flow and a parallel decrease of capital expenditures. Muscarella and Vetsuypens (1990), assessing the economic impact of a sample of leveraged buyouts (LBOs) in the United States, show that the new organizational structure leads to a reduction of firms' borrowing, and report significant upturns in conventional accounting measures of performance.

On the European side, Wright et al. (1997) analyze a sample of 158 buyouts that took place between 1983 and 1985 in the United Kingdom. They show that, after the buyout, these firms perform better than a matched sample of nonbuyouts. Desbrières and Schatt (2002) examine a sample of 161 LBOs completed in France between 1988 and 1994. They do not find support of superior postbuyout performance of investee companies relative to other firms in the same sector. Indeed they show deterioration in the short-term performance of French firms involved in LBOs. This downturn seems to be less detrimental to former subsidiaries of groups than to former family businesses, the latter forming a more consistent part of the French market.

More recently Cressy et al. (2007), using a sample of 122 buyouts completed in the United Kingdom between 1995 and 2002 and a matched sample of firms of the same industrial sector, show that buyouts by more specialized private equity firms tend to have higher postbuyout profitability levels. Scellato and Ughetto (2008), considering a European sample of buyout deals, investigate whether the specific features of the investing funds affect the ex-post profitability performance of target companies. They find that the presence of multiple co-investing funds is significantly associated with higher profitability, while the affiliation of the lead investor (independent or affiliated to a financial institution) is not systematically related to increases in profitability. The evidence also highlights that target companies whose lead investor is not European show relatively lower ex-post performance in terms of increased profitability.

Given this evidence, I advance the following hypothesis:

Hypothesis 1. The financial performance of PE-backed companies is improved after the buyout.

Aside from the studies focusing on the financial performance of firms involved in buyouts, there are a few other works that consider the effect of buyout transactions on productivity (Lichtenberg and Siegel, 1990; Amess, 2003; Harris et al., 2005). These analyses estimate productivity mostly by using plant- or division-level data. The results generally show enhanced productivity after the buyout. These findings are consistent with the theory that predicts that buyouts result in the reallocation of firms' resources to more efficient uses, and that a better corporate governance and monitoring framework creates managerial incentives that improve firm-level performance and technical efficiency (Scellato and Ughetto, 2008).

In particular Lichtenberg and Siegel (1990) analyze a sample of U.S. leveraged buyouts, considering up to five years' postbuyout performance and employing a two-stage approach. They report TFP gains at the plant level up to three years postbuyout relative to industry benchmarks. They attribute this enhancement in economic performance to organizational innovations and not to reductions in wages or capital investment or the layoff of personnel. Harris et al. (2005) extend the Lichtenberg and Siegel study by considering a larger sample of management buyouts (979 MBOs on 4,877 plants in the United Kingdom) and employing more sophisticated econometric techniques within a one-stage model. They find that plants experiencing an MBO are less productive than comparable plants before the transfer of ownership, but that they experience a substantial increase in productivity after the buyout. From a firm-level perspective, Amess (2003) presents U.K. evidence regarding the technical efficiency effects of LBOs, using a stochastic production frontier approach. The results show that firms undergoing a buyout have higher levels of productivity in the two years preceding the transaction. Efficiency is even further enhanced in the first four years following the buyout, but not beyond the fifth year after the buyout. The author concludes that efficiency gains resulting from LBOs have a merely transitory nature. This evidence, which is not consistent with Jensen (1989), who suggests that efficiency gains should exist as long as the LBO governance structure is in place, is explained in three different ways. First, it is reasonable that resources that are initially devoted to long-term intangible investment (such as R&D) are then shifted to produce current output. Second, the incentive effects of gearing decline as leverage are reduced over time. Third, the so-called shock therapy generated by a buyout operation, which leads to efficiency improvements, tends to decline once managers and workers become accustomed to the new structure.

This line of arguments leads to the following testable hypothesis:

Hypothesis 2. The productivity performance (LP and TFP) of PE-backed companies is improved after the buyout.

Although the change in ownership resulting from buyouts is generally found to exert a positive impact on firms' financial and productivity performances, there still seems to be concern about its potentially negative effects regarding R&D and innovation.[3] PE transactions have mainly been associated with cost-cutting activities and short-termism, to the detriment of technological innovation and R&D investments (Hall, 1990).

However, whether buyouts produce a negative impact on innovative productivity is not clear a priori. Both positive and negative effects are likely to emerge, and there is a good deal of literature from which potential explanations can be drawn (Ughetto, 2010). It is possible that routine technological matters may be delayed or set aside after the buyout because managers are more oriented to day-to-day operations resulting from the acquisition (Hitt et al., 1996) or because investors exert pressure on management to focus on investment opportunities that are less uncertain and more rewarding in the short term. Alternatively it could be that buyouts become a way to foster entrepreneurial initiatives, enabling managers to better and more thoroughly exploit firm resources for new innovation projects (Wright et al., 2001). It is also possible that such operations may not affect the technological subsystem of the firm and therefore have no impact at all on innovation output (Ahuja and Katila, 2001). The final impact depends on the degree to which these effects come into play.

The evidence in that sense is so far limited and rather mixed. Studies in the corporate control tradition have generally found that acquisitions are followed by a negative impact on the postacquisition innovation output of the resulting firm (Hitt et al., 1991, 1996). A negative impact of buyouts on firms' innovation efforts is found in Long and Ravenscraft (1993). The authors deal with the impact on R&D intensity for firms undergoing a leveraged buyout, finding a 40 percent drop in R&D intensity after the deal. However, the decline in innovation effort is mainly attributable to the increase in financial leverage following the deal, rather than to a short-term strategy followed by investing funds. Evidence to the contrary is provided by Hall (1990), who studies the effects of corporate restructuring on industrial research spending of 2,500 U.S. firms from 1959 through 1987. Out of 2,500 firms she identifies 80 acquisitions as leverage buyouts. The author outlines that LBOs have taken place in sectors where R&D investment and innovation are not important. Even in cases in which an R&D-performing firm undergoes a buyout, the same pattern of R&D investment is maintained after the deal.

Bruining and Wright (2002), Zahra (1995), Wright et al. (2001), and Smith (1990) give further support of the hypothesis that private equity intervention is not detrimental to long-term investments in R&D and innovation. For a sample of Dutch firms, Bruining and Wright find that management buyouts are followed by significant increases in new product development. Zahra studies the U.S. market and finds that MBOs result in more effective use of R&D expenditure and new product development. This evidence confirms that private equity funds provide superior managerial and technical expertise that enables acquired firms to seize new market and innovative opportunities. Smith focuses on insider-driven management buyouts for a sample of U.S. public companies going private. He finds that after the deal their cash flows increase significantly, without negatively impacting other operating key variables, including R&D. Wright et al. provide several examples of buyouts in technology-based industries followed by significant increases in product and technology development, R&D and patenting. Lerner et al. (2008) examine patents filed by 495 firms that received private equity backing between 1986 and 2005. They find no evidence that LBOs are associated with a decrease in

investments in innovation. On the contrary, they find that patents granted to firms involved in private equity transactions are more often cited, show no significant shifts in the fundamental nature of the research, and are more concentrated in the most prominent areas of companies' innovative portfolios. Ughetto (2010), analyzing the patenting activity of a sample of Western European manufacturing firms undergoing a buyout, finds that the innovation activity of portfolio firms is affected by different types of investors, pursuing different objectives and differing in their risk propensity, expected returns, and investment policies. In particular, independent private equity firms are found to be negatively and significantly associated with the level of postbuyout innovation effort compared to captive investors.

Given the different theoretical expectations put forward by previous literature, I advance the following two alternative hypotheses:

Hypothesis 3a. Buyouts have a positive impact on acquired firms' innovative activity.

Hypothesis 3b. Buyouts have a negative impact on acquired firms' innovative activity.

Sample Characteristics and Descriptive Statistics

Data Sources

I extracted the profiles of a sample of Western European firms that underwent a buyout between 1997 and 2004. For these firms, I gathered yearly accounting and patenting information for the years 1995–2006. I considered only buyouts involving privately held companies (private-to-private deals), thus disregarding either public-to-private transactions or buyouts involving divisions of corporations. I decided to focus on Europe in order to complement previous research largely limited to the United States.

Data on buyouts are derived from two different commercial databases: Venture Source (from Venture One) and Venture Expert (from Thomson Financial). Both databases contain data that are largely self-reported by private equity firms and/or by the companies in which they invest. Data set providers also receive much of their information from limited partners.[4] Wherever possible, these data were cross-checked with published documents such as annual reports, press releases, and newspaper articles.

Firm-attribute data (such as NACE-3 digit industry codes) and accounting information have been extracted from the Amadeus database provided by Bureau

Van Dijk, which reports financial accounting data for 10 million public and private companies in thirty-eight European countries. Due to the absence of a unique numerical identification code for each firm in the sample, I had to check, one by one, whether there was a correspondence between each firm's name and the name reported in Amadeus. Incorrect matches may derive from the existence of different companies with similar names, name changes, other commonly used names, or spelling mistakes. The fact that Venture Expert and Venture One report firms' previous names and other names for which companies are commonly known ("also known as") helps reduce such problems.

I dropped observations that did not report complete accounting records in the period from year –1 to year +2 from the year of the first investment, defined as year 0. The final sample consists of 265 European firms that underwent buyouts from 1997 to 2004.

Following previous studies (Cressy et al. 2007; Lerner, 1999), I created a control group of 265 private companies. The control group was matched with the buyout group by country, industry, and size. More specifically, for each PE-backed company I collected NACE 3-digit industry codes. Then I formed a list of all private companies in the same industry and in the same country in Amadeus. From that list I selected the company that was most similar to the PE-backed company in terms of number of employees in the year of the deal.[5]

The last step of data gathering was to collect patent portfolio data for all the companies analyzed. Patent information has been extracted from Delphion, a data set run by Thomson Financial. The searches were restricted to patents issued by the European Patent Office (EPO) reporting an application date between 1995 and 2006. No applications from 2007 appear because I examined only successful applications that had already been granted by the EPO.

Variables

A listing of the variables used in the empirical analysis along with their definitions is provided in Table 11.1. These variables include accounting information on firms' profitability, liquidity, degree of leverage, size, and innovation. All variables are computed for both the target companies and the control sample.

I explore three different dimensions of firm performance, examining growth in terms of size, profitability, and productivity. The growth rate of these variables is computed on a time window of three years around the investment date (t_{-1}; t_{+2}). This seems to be a reasonable choice because it allows the evaluation of a firm's performance over a sufficiently long time period after the deal (two years), while avoiding the need to use end-of period accounting information for year t = 0, which might reflect significant transitory changes due to the deal.

Economists have mainly employed the growth rate of TFP as an aggregate measure of innovativeness; however, such a measure can also be applied to firm-level

Table 11.1 Definition of Variables Used in the Empirical Analysis

Variables	Definition
EBITDA	Earnings before interest, taxes, depreciation, and amortization
TOTAL ASSETS	Firms' total assets
TFP	Total factor productivity
LP	Added value/number of employees
PATENT	Number of patent applications (in year t) that are later granted by the EPO
PATENT STOCK	The depreciated sum of past patents, where the depreciation rate is 15%
BUYOUT	Dummy variable that is equal to 1 if the firm underwent a buyout; 0 otherwise
LEV	Total debt divided by total assets
ROS	Return on sales
POSITIVE EARNINGS	Dummy variable that equals 1 if the firm shows positive earnings one year before the buyout; 0 otherwise
SIZE	Logarithm of the number of employees
SIZE2	(Logarithm of the number of employees)^2
MSCI	The Morgan Stanley Capital International annual index returns for the country-specific stock markets measured in the year of the buyout
EVCA INDEX	The country-specific EVCA index of tax and legal environment for the venture capital and private equity industry (a lower number on a 3-point scale indicates a better environment). The index reflects the situation in each country as of July 1, 2008.

data.[6] Typically the computation of firm-level TFP requires the preliminary estimation, at industry level, of the parameters of constant return to scale Cobb-Douglas production functions. Such a procedure can benefit from various sophisticated econometric approaches, but it clearly requires large samples of companies (Scellato and Ughetto, 2008).[7] Given the reduced size and the peculiar structure of the sample of firms, I had to adopt the methodology proposed by Duguet (2007) for the computation of firm-level yearly values of TFP. Such an approach, although less robust to individual heterogeneity than the other, has been applied in several studies.

In order to calculate firm-level TFP, I computed, for each firm included in the sample, the following parameters:

1. Value added per employee $q = \ln\left(Q/L\right)$.
2. Capital per employee $c = \ln\left(C/L\right)$.
3. Labor cost share $s = W/Q$.

where Q denotes real value added, L the number of employees, C the real physical capital, and W the labor costs. All variables are taken at the end of the year and are

deflated using year 2000 basic prices at the sectoral level. Total factor productivity for company *i* in year *t* is equal to

$$TFP_{i,t} = q_{i,t} - \left(1 - s_{i,t}\right)c_{i,t}$$

In the second part of the empirical analysis I test the impact of buyout operations on acquired firms' innovative performance. $PATENT_{it}$ represents the patenting frequency of firms, which is the number of successful patent applications (or granted patents) by a firm in a given year. It varies from 0 to several or even many for some firms. Granted patents bear the date of the original application and are therefore assigned to the year when they were originally applied for. Incidentally this procedure controls for differences in delays that may occur in granting patents after the application is filed (Trajtenberg, 1990; Ahuja and Katila, 2001).

To test the impact that private equity investments have on acquired firms' ex-post performances, I include a dummy variable (BUYOUT), which equals 1 if a firm has undergone a buyout. As controls, I include measures of firm size, profitability, and leverage. SIZE is the logarithm of the number of employees for the companies in the sample, and $SIZE^2$ is its squared value. I use the log transformation to account for any nonlinearities, as well as for the possible presence of outliers. The variable LEV, measured by the ratio of debt to total assets, controls for the impact of leverage. ROS represents the return on sales.

In the model testing the impact of private equity on firms' innovation activity, I include a variable measuring firms' patent stock, which at least partially captures unobserved heterogeneity in the innovation-generating capabilities of firms.[8] Following Blundell et al. (1995), PATENT STOCK is calculated as the depreciated sum of past patents, where the depreciation rate is 15 percent.[9] Previous studies examining patenting intensity have used similar measures (Ahuja and Katila, 2001; Dushnitsky and Lenox, 2005).

Theory and evidence indicate a strong link between the size and liquidity of a nation's stock markets and the extent of its private equity investment market (Black and Gilson, 1998; Lerner, 2002). To control for the state of the stock markets at the time of the buyout, I include the Morgan Stanley Capital International annual index returns for the country-specific stock markets (MSCI). Annual returns are used.[10] The index applies country weights based on gross domestic product (GDP). The level of the index correlates with the volume of equity funds available for buyout purposes, and this in turn may influence the company's growth possibilities and innovation activity over the postbuyout period (Armour and Cumming, 2006; Cressy at al., 2007).[11]

Legislative enactments make a difference to private equity finance (Armour and Cumming, 2006; La Porta et al., 1998, Lerner and Schoar, 2005; Cumming and Zambelli, 2010). Favorable fiscal and legal environments facilitate the establishment of venture capital and private equity funds and increase the supply of capital. I build upon prior work (Armour and Cumming, 2006) by employing a composite index for national fiscal and legal environments provided by a leading trade

association, the European Private Equity & Venture Capital Association (EVCA). For each country, the index is a composite score calculated on thirty different legal and fiscal variables and reflecting the situation in each country as of July 1, 2008 (EVCA, 2008a).[12] The EVCA INDEX is structured in such a way that a lower number (on a 3-point scale) indicates a better legal and tax environment for venture capital and private equity funds.

Summary Statistics

Table 11.2 presents the number and percentage of firms undergoing a buyout that operate in different European countries. Following La Porta et al. (1998), I gather the countries according to their legal origin. "French legal origin" includes firms from France, Italy, Belgium, and Spain; "English legal origin" gathers U.K. firms; and "German legal origin" comprises firms in Germany and the Netherlands. The table shows that most firms included in the sample that are subject to a buyout belong to the "French legal origin" cluster (more than 50 percent), followed by the "English legal origin" group (37.74 percent), and that just a limited number are from the "German legal origin" system (8.68 percent).

Table 11.3 presents descriptive statistics for the samples of buyouts and matched companies in the deal year. The median number of employees in the year of the buyout is similar for buyouts (249) and nonbuyouts (244), due to the construct of the matching process. The median leverage values for the same year, as measured by debt over total assets, are 41.3 percent and 40.8 percent, respectively. The buyout group reports a median book value of total assets of €35 million, compared with a value of €31 million for the matched sample. The median return on sales values is 4.5 percent for the buyout group and 4 percent for the control group.

Table 11.4 reports the incidence of cases in which one buyout company outperforms its matched company. In particular I test the presence of significant

Table 11.2 Number and Percentage of Firms Undergoing a Buyout, by Legal Origin

Legal Origin	Number of Firms	%
French legal origin	142	53.58
German legal origin	23	8.68
English legal origin	100	37.74
TOTAL	265	100

Notes: The table reports the distribution (and percentage incidence) of the 265 firms undergoing a buyout across groups of countries sharing a common legal origin. The "English legal origin" group includes the United Kingdom; the "French legal origin" group refers to France, Spain, Italy, and Belgium; the "German legal origin" group includes Germany and the Netherlands.

Table 11.3 Descriptive Statistics for the Buyout and Control Group

Variables	Median	St. Err	25th percentile	75th percentile
BUYOUT				
No. Employees	249.5	95.18	106	696.5
SIZE (logarithm)	5.519	0.066	4.663	6.546
LEV	0.413	0.387	0.167	0.687
ROS	0.045	0.026	0.007	0.094
CONTROL				
No. Employees	244	115.32	109.5	670.5
SIZE (logarithm)	5.549	0.092	4.695	6.508
LEV	0.408	0.895	0.167	0.679
ROS	0.040	0.022	0.013	0.087

Notes: The table reports descriptive statistics for the 265 buyout firms and 265 nonbuyout firms. Variables are considered at the deal date (t = 0).

Table 11.4 Percentage of Firms Registering a Growth of Indicators Exceeding That of the Matched Firms

	Total Sample		English Legal Origin		French Legal Origin		German Legal Origin	
	Buyout	Control	Buyout	Control	Buyout	Control	Buyout	Control
Growth TOTAL ASSETS (log)	58.71	41.29	63.00	37.00	55.32	44.68	60.87	39.13
Growth EBITDA	60.34	39.66	59.77	40.23	59.54	40.46	68.42	31.58
Growth LP	60.98	39.02	67.00	33.00	55.32	44.68	69.57	30.43
Growth TFP	46.79	53.21	54.35	45.65	42.11	57.89	53.33	46.67

Notes: Results are for the entire sample and for different subsamples of buyout companies sharing the same legal origin.

The table reports comparisons in the percentage of firms showing a growth of performance indicators exceeding those of the matched firms over the period 1997–2004. All growth rates are computed over the t_{-1}, t_{+2} time window, where the buyout year is t = 0. The groups of countries are identified according to their legal origin (see La Porta et al., 2000). English legal origin: United Kingdom; French legal origin: France, Spain, Italy, and Belgium; German legal origin: Germany and the Netherlands.

differences across groups of countries sharing a common legal origin, under the hypothesis that corporate governance rules affect the efficacy of private equity interventions. Looking at the overall sample (first column of Table 11.4), I observe that companies in the buyout subsample outperform their matched pairs in over 60 percent of the cases when considering the growth rates of EBITDA. These differences are also relevant across different European countries. As expected, buyout deals are also characterized by a contingent increase of total assets, which turns out to be higher than that experienced by matched companies in 58.71 percent of the cases and is particularly pronounced in the English and German legal origin groups. On the productivity side, the data in Table 11.4 show that only in 46 percent of the cases do private equity–backed companies outperform their matched companies in terms of the growth rate of TFP. On the contrary, I observe a higher incidence of cases in which buyout companies outperform matched companies when LP is considered. Such a positive association between buyout and LP variation is persistent across the different subsamples reported in the table.

I then computed a set of univariate one-tail *t*-tests, which aim at identifying the statistical significance of some of the preliminary evidence discussed above. The data in Table 11.5 reveal that the distribution of growth rates of profitability

Table 11.5 One-Tail t-test of Different Performance Measures for the Buyout and Control Groups (time window: t_{-1}; t_{+2})

	BUYOUT	CONTROL	*P*-value
Growth TOTAL ASSETS (log)			
Mean	0.330	0.188	0.0007
St.err	0.034	0.026	
Growth EBITDA			
Mean	0.397	0.077	0.054
St.err	0.117	0.159	
Growth LP			
Mean	0.695	0.113	0.193
St.err	0.559	0.203	
Growth TFP			
Mean	0.082	0.081	0.485
St.err	0.029	0.025	

Notes: The sample is made of two distributions of 265 individuals for each subset. Using a one-tail t-test, the table compares the mean and standard error values of the variables used in the regression analysis between buyouts and nonbuyout companies over the period 1997–2004.

Table 11.6 Number and Percentage of Firms Patenting for the Buyout and Control Groups (granted patents)

	CONTROL		BUYOUT		All sample	
	No. firms	%	No. firms	%	No. firms	%
Not patenting	238	89.81	236	89.06	474	89.43
Patenting	27	10.19	29	10.94	56	10.57
Total	265	100	265	100	530	100

Notes: The table reports the number and percentage incidence of firms patenting for the control and buyout sample. A firm is defined as a patenting firm when it was granted at least one patent between 1995 and 2006.

and size for the subsample of buyout companies has significantly higher means. In contrast, the variation of value added per employee and of TFP do not show statistically robust differences between buyout companies and matched pairs.

Among the 265 firms that underwent a buyout, 29 firms (10.94 percent) were granted a European patent between 1995 and 2006. For the control sample, 27 firms (10.19 percent) out of 265 were granted a patent in the same period (see Table 11.6).

Throughout the time window considered PE-backed firms were granted a total of 180 patents, while control firms were granted 202 patents. The mean number of patents granted from 1995 to 2006 is, respectively, 0.67 for the subsample of PE-backed firms (and 6.20 for those patenting) and 0.76 for the subsample of control firms (and 7.48 for those patenting). These data confirm that buyouts in Europe still tend to involve low-patenting companies.

About 62 percent of the patenting firms belonging to the buyout group (18) had obtained a patent before the buyout (for a total of 69 granted patents, and a mean value of 3.83 each), while 44.8 percent (13) were granted a patent by the end of the study period (for a total of 35 granted patents, and a mean value of 2.69 each). Ten firms obtained a patent in the year of the deal (for a total of 21 granted patents; see Table 11.7).

Table 11.7 Number of Granted Patents and Number of Firms Patenting in the Deal Year and in the Years before and after the Deal

		Number of Patents	Number of Firms Patenting
Patents granted	before the deal	69	18
	in the deal year	21	10
	after the deal	35	13

Notes: The table reports the number of patents granted as well as the number of firms patenting in the deal year and in the years before and after the deal for the sample of buyout firms.

Model Specification

In this section I introduce a set of model specifications that are expected to provide more robust evidence on the relationship between private equity investments in the form of buyouts and acquired firms' ex-post performance, expressed in terms of growth rate of profitability, size, labor productivity, and total factor productivity. To study the relationship between innovation output (measured by patenting) and PE financing I use an econometric model for count data.

Testing the Impact of Buyouts on Firms' Growth Rates

I initially estimate a set of ordinary least squares (OLS) models in which the growth rates of EBITDA, TOTAL ASSETS, TFP, and LP are regressed against a set of covariates that account for the initial conditions of target companies in the year before the deal. The growth rate of these variables is computed on a time window of three years around the investment date (t_{-1}; t_{+2}). In all specifications I test the impact of a dummy variable (BUYOUT) that equals 1 if a firm has undergone a buyout. I include time, country, and industry dummies, as well as controls for the state of the stock markets at the time of the buyout and for the national legal and fiscal conditions.

The results from simple OLS estimations might be biased if the BUYOUT dummy turns out to be linked with firms' unobservable characteristics and correlated to the error term. Since investors and companies do not meet randomly, attributing a causal interpretation to the coefficient of the effect of private equity might be incorrect. For example, finding that buyout companies grow faster than nonbuyout companies may merely reflect a scenario in which private equity funds invested in good companies without adding value to them. Alternatively it might be the case that private equity investors were indeed able to add value to acquired companies through competent monitoring and advice (Scellato and Ughetto, 2008). Lack of control for the potential endogeneity of private equity financing may lead to biased estimates of its effect on ex-post performance measures. Several studies have recognized the endogenous nature of the private equity investment choice and have addressed this problem within different selection frameworks, ranging from instrumental variables (Bottazzi et al., 2005) to Heckman models (Colombo and Grilli, 2005, 2009) and propensity scores (Engel and Keilbach, 2007).

In order to account for the possible nonexogenous nature of the variable BUYOUT, I adopt a "two-step procedure" inspired by the "endogenous treatment effect literature" (see Vella and Verbeek, 1999; Heckman, 1990; Colombo and Grilli, 2005, 2009). This approach consists of estimating a probit model in which the likelihood of undergoing a buyout is explained by a set of covariates (SIZE (t_{-2}), LEV (t_{-2}), ROS (t_{-2}), and POSITIVE EARNINGS). The second step involves either

an instrumental variable (IV) approach or a (restricted) control function (CF) approach. In the first case, the predicted probabilities of receiving private equity financing are used in the original regression instead of the BUYOUT dummy. In the second case, a correction term computed for both the buyout and the control group (see Gourieroux et al., 1984) is included in the set of covariates in addition to the dummy BUYOUT. The two approaches have some limitations (see Colombo and Grilli, 2005 for a discussion), but clearly when the two estimation techniques lead to similar results, it brings support to the robustness of the findings.

Testing the Impact of Buyouts on Firms' Innovation Output

Because of the discrete nonnegative nature of the dependent variable ($PATENT_{it}$), linear regression can yield inefficient, inconsistent, and biased coefficient estimates (Hausman et al., 1984). Count models are appropriate for such data. Either Poisson or negative binomial regression models have often been used to model the distribution of count data; they have the advantage of ensuring that zero values of the dependent variable are incorporated into a model rather than implicitly truncated, as they are in OLS regressions.

Poisson models have the restraining property that they constrain the variance to equal the mean. If this assumption is violated and the conditional variance is greater than the conditional mean, then the standard errors of parameters in the Poisson model are likely to be underestimated, leading to *p*-values that are too low. This is usually referred to as the "overdispersion" problem. Among the reasons that may lead to the violation of this assumption are unobserved heterogeneity and a high frequency of zeros in the data (Cameron and Trivedi, 1998). In the presence of overdispersion, the estimates of the Poisson regression model are consistent but inefficient (Gourieroux et al., 1984).

A goodness-of-fit test rejected the Poisson distribution assumption, indicating that more general econometric models had to be considered. Therefore I employed a negative binomial model, an extension of the Poisson model that allows for heterogeneity in the mean function and thus relaxes the variance restriction (Hausman et al., 1984).

I estimated the negative binomial regression using the generalized estimating equations (GEE) technique with exchangeable correlation structure. The GEE method corrects for autocorrelation by estimating the correlation structure of the error terms (Liang and Zeger, 1986). The sample shows a high incidence of zeros of the PATENT variable. Nonpatenting firms are expected to be systematically different from those in which at least one patent was applied for and subsequently granted. Eliminating those observations (as one would with a fixed-effects specification) would likely bias the estimates in the regression analysis. Firms might not patent for different reasons: they may be characterized by a low innovative profile; they may decide not to patent because of the elevated costs or because they rely on other means to protect their inventions; or they might not have found anything

to patent although they are candidates for this activity (Ughetto, 2010). The GEE specification allows for the inclusion of firms for which no patenting activity was observed during the sample period.

Results

In Tables 11.8 and 11.9, I present the results from the OLS and the endogenous treatment models (IV and CF). All covariates are computed at time t_{-1}, while the dependent variables are the growth rates of EBITDA and TOTAL ASSETS (Table 11.8), TFP and LP (Table 11.9) between t_{-1} and t_{+2}. As controls, I use the levels of size (SIZE), its squared value ($SIZE^2$), firms' financial leverage (LEV), returns on sales (ROS), and the state of the stock markets (MSCI). In all models industry, time, and country dummy variables are included. Given that the capability of private equity investors to exert a positive and significant impact on target firms' performance might be affected by institutional settings, I also introduced a control for the legal and fiscal environment in which they operate (EVCA INDEX).

As was explained in the previous section, to take account of the endogenous nature of PE investments I followed two different methods: first, I instrumented the buyout dummy by the predicted value of the probability of undergoing a buyout (BUYOUT predicted) provided by the selection equation (not shown); second, I included both the buyout dummy and the generalized residual of the selection equation into the growth regression (see Colombo and Grilli, 2005, 2009 for an application). The results highlight a positive and significant effect of BUYOUT on the growth rate of both TOTAL ASSETS and EBITDA (with a lower confidence level in the IV estimates for EBITDA). Independent of the estimation technique used, these results hold, pointing to the robustness of the findings. The economic effect of buyouts is substantial: in the different model specifications, the percentage change between t_{-1} and t_{+2} in EBITDA is between 24 and 31 percent higher for firms undergoing a buyout as compared to nonbuyout firms. This effect appears to be fairly significant also when considering the growth of total assets, which is between 12 and 18 percent higher for the buyout group.

Firms with higher initial profitability show higher growth rates of EBITDA and TOTAL ASSETS, with different levels of significance. Firms' dimensions in the year before the deal are negatively correlated with the growth of profitability and firm size, although this effect is not statistically significant in the last case. Higher prior levels of leverage negatively impact the growth of profitability and total assets only in the OLS regressions. The magnitude of the coefficient associated with the variable MSCI is limited, as well as its statistical significance. The sector controls suggest that industries such as computer, energy, semiconductor, and health are associated with higher growth rates of profitability and total assets.

Table 11.8 OLS and Endogenous Treatment Model (IV and CF)

	Growth EBITDA			Growth TOTAL ASSETS		
	OLS	IV	CF	OLS	IV	CF
BUYOUT	0.262***		0.244***	0.124***		0.122***
	(0.112)		(0.115)	(0.044)		(0.045)
LEV (t_{-1})	−0.314**	0.022	−0.095	−0.179***	−0.043	−0.036
	(0.173)	(0.015)	(0.232)	(0.081)	(0.092)	(0.091)
SIZE (t_{-1})	−0.43**	−0.520***	−0.554***	−0.102	−0.124	−0.136
	(0.251)	(0.249)	(0.261)	(0.085)	(0.095)	(0.095)
SIZE2 (t_{-1})	0.038**	0.041***	0.036*	0.005	0.005	0.005
	(0.020)	(0.020)	(0.021)	(0.007)	(0.008)	(0.007)
ROS (t_{-1})	0.036	0.520**	0.022	0.029**	0.322*	0.266
	(0.046)	(0.296)	(0.034)	(0.016)	(0.200)	(0.250)
BUYOUT predicted		0.315*			0.189***	
		(0.187)			(0.042)	
EVCA INDEX	−0.643*	−0.556	−0.649**	0.050	0.065	0.043
	(0.386)	(0.388)	(0.373)	(0.153)	(0.162)	(0.158)
MSCI	0.001**	0.001**	0.001**	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Lambda			8.300***			1.756
			(2.776)			(1.464)
Constant	2.667***	1.011*	−6.274***	1.288***	0.073*	−1.453
	(1.176)	(0.975)	(2.688)	(0.496)	(0.431)	(1.360)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Legal Origin dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	530	530	530	530	530	530
R^2	0.104	0.082	0.105	0.165	0.151	0.153

Notes: The model is extended to both buyout and nonbuyout companies. Dependent variables: Growth EBITDA, TOTAL ASSETS (t_{-1}; t_{+2}).

The table reports OLS, IV, and CF regressions. For the sake of synthesis, I omit estimated coefficients of industry, time, and country dummies. The probit model predicting the probability of receiving private equity financing has been estimated given this set of presample covariates: SIZE (t_{-2}), LEV (t_{-2}), ROS (t_{-2}), and POSITIVE EARNINGS (dummy). Robust standard errors in parentheses. ***: significant at the 1% level **: significant at the 5% level, *: significant at the 10% level.

In order to test the robustness of these findings I have explored a set of alternative specifications. When the sample is split according to the legal origin, the BUYOUT dummy continues to exert a significant effect on both profitability and dimensional growth in the English and French legal origin groups. Instead the effect of buyout deals on the growth rate of total assets and EBITDA loses significance for

Table 11.9 OLS and Endogenous Treatment Model

	Growth LP			Growth TFP		
	OLS	IV	CF	OLS	IV	CF
BUYOUT	−0.021		−0.025	0.131		0.116
	(0.019)		(0.019)	(0.080)		(0.085)
LEV (t_{-1})	−0.022	−0.021	−0.032	−0.149	−0.136	−0.158
	(0.026)	(0.031)	(0.036)	(0.126)	(0.146)	(0.148)
SIZE (t_{-1})	0.256**	0.292**	0.315***	−0.127	−0.130	−0.102
	(0.140)	(0.150)	(0.148)	(0.124)	(0.134)	(0.142)
SIZE2 (t_{-1})	−0.019**	−0.022**	−0.021***	0.012	0.013	0.015
	(0.010)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
ROS (t_{-1})	0.051	0.157*	0.447**	−0.287	0.322*	0.068
	(0.066)	(0.096)	(0.241)	(0.271)	(0.200)	(0.482)
BUYOUT predicted		−0.049			−0.167	
		(0.052)			(0.339)	
EVCA INDEX	−0.108**	−0.135***	−0.110***	0.714***	0.617**	0.679**
	(0.058)	(0.065)	(0.052)	(0.294)	(0.336)	(0.348)
MSCI	−0.001	−0.001	−0.001	−0.001	−0.001	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Lambda			−2.828**			−4.809***
			(1.545)			(2.336)
Constant	−0.574*	−0.676	1.972	−0.064	−0.072	4.693***
	(0.347)	(0.426)	(1.247)	(0.716)	(0.665)	(2.116)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Legal origin dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	530	530	530	530	530	530
R^2	0.194	0.232	0.291	0.065	0.050	0.076

Notes: The model is extended to both buyout and nonbuyout companies. Dependent variables: Growth LP, TFP (t_{-1}; t_{+2}).

The table reports OLS, IV, and CF regressions. For the sake of synthesis, I omit estimated coefficients of industry, time, and country dummies. The probit model predicting the probability of receiving private equity financing has been estimated given this set of presample covariates: SIZE (t_{-2}), LEV (t_{-2}), ROS (t_{-2}), and POSITIVE EARNINGS (dummy). Robust standard errors in parentheses. ***: significant at the 1% level **: significant at the 5% level, *: significant at the 10% level.

the German legal origin group, which is, however, a very small group. If the sample is split into subsamples of highly leveraged versus low leveraged deals,[13] it turns out that buyouts positively affect the growth of total assets (with different levels of significance according to the model specification) in both cases, while they exert a positive and significant effect on profitability only in the subsample of low leveraged firms.

Table 11.9 reports the results for the TFP and LP specifications and confirms the nonsignificant impact of the buyout event with respect to the control sample. The variables accounting for prior leverage and profitability do not show a statistically significant effect in all model specifications. In the LP model size seems to exert a positive and statistically significant impact on the growth rate of labor productivity. The English legal origin group displays a negative and significant sign, while the French legal origin dummy is not significant, compared to the omitted category (German legal origin).

Table 11.10 presents the results of the GEE negative binomial model and reports the incidence rate ratios. Incidence rate ratios can be interpreted as the percentage change in the dependent variable for a one-unit change in the independent variable;

Table 11.10 GEE Negative Binomial Model

	PATENT it_{+1}	PATENT it_{+2}
BUYOUT (t_{-1})	0.182***	0.264***
	(0.048)	(0.083)
LEV	1.006	1.005
	(0.022)	(0.027)
SIZE	6.008***	3.213**
	(3.695)	(2.095)
SIZE2	0.866***	0.906**
	(0.044)	(0.049)
ROS	0.744***	0.647***
	(0.035)	(0.055)
PATENT STOCK (t_{-1})	1.510***	1.449***
	(0.057)	(0.062)
EVCA INDEX	1.506	0.636
	(1.227)	(0.578)
MSCI	0.997	0.998
	(0.001)	(0.001)
Year dummies	Yes	Yes
Industry dummies	Yes	Yes
Legal origin dummies	Yes	Yes
Number of observations	4,164	3,759
Wald chi2	278.25***	197.57***

Notes: Dependent variable: PATENT(t).

The table reports incidence rate ratios. Standard errors are reported in parentheses. For the sake of synthesis, I omit estimated coefficients of industry, time, and country dummies. ***: significant at the 1% level **: significant at the 5% level, *: significant at the 10% level.

they allow for comparisons across coefficients. For binary variables, the reported incidence rate is the proportional increase in the number of patents following an increase in the variable from 0 to 1. A ratio smaller than 1 indicates a negative relationship between the dependent and independent variables, and a ratio greater than 1 indicates a positive relationship. In order to explore the robustness of the findings across alternative specifications I employ alternative lags of the independent variables relative to the dependent variable. I estimate models using one-year (Model 1) and two-year (Model 2) lags. Overall model fit is assessed by Wald $\chi 2$. Each model shows good fit to the data at the 1 percent significance level. All models include country dummies in order to capture any exogenous effect due to country specificities. In addition to country-specific effects, I accounted for annual variations in patenting due to macroeconomic trends (such as economic downturns and periods of technological ferment) by including time dummies in all regressions. It has often been suggested that the propensity to patent may differ widely by sectors because of the relatively more high-tech nature of the industries or the speed and cost of imitation (Pavitt and Patel, 1988). To control for these differences, I include sector dummies in all model specifications. To conserve space, country, industry, and time period effects, though estimated, are not reported.

The dummy variable BUYOUT is negatively correlated with the patent output at the 1 percent significance level in the models specified with one-year and two-year lags. From the incidence rate ratios it emerges that undergoing a buyout decreases the expected number of granted patents by a factor of 0.18. The magnitude of the effect is greater in the model using two-year lags (0.26). Hence results show that buyouts lead to a reduction of patenting activity after the buyout. As far as the control variables are concerned, most of the findings are quite straightforward. As expected, the cumulative number of inventions previously patented by sample firms (PATENT STOCK) positively affects the number of successful patent applications in any given year after the buyout. The importance of previous patenting activity is significant at the 1 percent level in all estimates, and it is robust to the several model specifications. This result is in line with the theory predicting that the results of past searches become natural starting points for initiating new searches (Rosenberg, 1982; Nelson and Winter, 1982). The statistical significance of the variable also indicates that it is important to control for firm-level unobserved heterogeneity.

In all models of Table 11.10 the size of the firm (SIZE) has a positive and statistically significant effect on the number of successful patent applications. This is consistent with previous studies indicating that the patent activity of companies increases with size (Mansfield, 1986; Cassiman and Veugelers, 2006). When an additional year lag is included, the individual coefficients for the variable are positive with a lower level of statistical significance. In all models firm leverage (LEV) is never a statistically significant predictor of the number of successful patent applications. ROS displays a negative and statistically significant relationship with patent output. The effect of national fiscal and legal environments for venture capital and private equity funds captured by the EVCA INDEX on subsequent firm patenting fails to achieve statistical significance in any of the estimated

models. Also MSCI has a trivial and nonsignificant effect in all model specifications. Several industry and country dummies are consistently significant in all models. This indicates that it was important to control for industry and country effects in these data. Sectors characterized by high levels of innovativeness (biotechnology, computer science, mechanical engineering, chemistry) are positively and significantly associated with patent output. The English legal origin dummy does not display any significant effect, while France legal origin countries are positively associated with a higher patenting rate, compared to the omitted category (German legal origin).

Conclusions

The question of the extent to which buyout operations affect the performance of acquired firms is of considerable interest to both economists and policymakers. Policy decisions regarding the optimal level of buyout activity are driven by the impact of such transactions on firms' performance and ultimately on economic growth.

This issue has been investigated in prior work, which is evidence of the importance policymakers and academics place on the topic. Previous empirical studies, mainly based on U.S. and U.K. data, have generally highlighted a positive effect on growth of PE financing in the form of buyouts. Nevertheless there still seems to be concern over the potentially negative effects of such transactions (layoffs of personnel and reductions in wages, capital, and R&D investments). This chapter provides additional evidence on the financial, productivity, and innovation performance of a sample of Western European firms undergoing a buyout from 1997 to 2004, using a matched sample of non-PE-backed firms.

In accordance with previous studies, the findings show a positive impact of buyout operations on companies' profitability and size growth, even after controlling for the endogenous nature of private equity investments and for the ex-ante selection capability of private equity funds (size, financial leverage, and profitability in the year before the deal). Nevertheless I could not find analogously significant effects when observing variables related to productivity. In fact even if I do not witness a net decrease in productivity indicators, I have not been able to identify significant differences between the buyout subsample and the control sample. This might be due to the fact that investors are more focused on midterm returns, while the structural changes leading to systematic and significant increases in LP and TFP are more likely to exert their effects in the long run.

Concerning the results on patenting, it emerges that buyout deals are associated with significantly lower firm patenting. Such results contradict, to some extent, recent evidence regarding the effect of private equity investments on innovation

effort (see Lerner et al., 2009; Wright et al, 2001); however, studies finding this evidence focus on the segment of high-tech companies. The sample used in this study is mainly composed of companies operating in a sector for which radical (patentable) innovations are negligible and innovation is instead incremental, aiming mostly at obtaining marginal efficiency gains.

Notes

1. U.K. buyouts are often a means of divesting divisions and subsidiaries from large groups and, to a lesser extent, are related to listed companies going private, while in France, Spain, and Italy buyouts mostly take place to facilitate the transfer of family businesses.
2. Although there is considerable literature about the validity of patents as indicators of innovation, there are serious limitations in the use of patent data, the most obvious being that not all innovations are patented. This is because not all inventions meet the patentability criteria and because there are other means of appropriating the value of an invention other than patenting (e.g., secrecy, time to market). Moreover patents are acknowledged as a tool to protect innovation in large companies, while their use by small firms can be less effective, and industries vary in their propensities to patent (Levin et al., 1987). Finally, the number of patents granted to a single company might be affected by a "truncation issue" for more recent years, due to the time lag between the application and the grant (if any) of a patent in the examination process of the patent office. Nevertheless using patent data is still the dominant approach to measuring innovative output (Kortum and Lerner, 2000) since it is the most detailed and best documented data on it available.
3. Wright et al. (2001) highlight that this concern has stemmed from a prevalent focus on leverage buyouts in mature sectors characterized by limited investment opportunities.
4. While Venture Expert collects its data primarily from general partners in the United States, limited partners provide half of the data in Europe. Venture Source claims to collect its data mainly from the companies themselves, although it also surveys private equity funds (Mathonet and Meyer, 2007).
5. In any case, I set an upper limit for the difference in employment equal to +/–15 percent.
6. For an extensive discussion of the properties and empirical criticalities of firm-level TFP, see Disney et al., 2003; Crépon et al., 1998.
7. For a theoretical discussion, see Olley and Pakes, 1996. For applications to Italian data, see Parisi et al., 2006; Antonelli and Scellato, 2007.
8. Unobserved heterogeneity refers to the possibility that unmeasured (or unmeasurable) differences among observationally equivalent firms affect their patenting. The values of the dependent variable in the periods preceding the study period are used to construct a variable that serves as a "fixed effect" for the firms in the panel.
9. I also experimented with other values (25 percent, 30 percent) and found that the precise rate made very little difference.
10. There is a risk that annualized stock market returns might take into account returns that resulted subsequent to many of the buyout transactions. To check for this

possibility, I constructed an alternative specification using the variable MSCI lagged by one year. The results were the same.

11. To capture potential effects of the stock market boom of the 1990s that are independent of the market index I also experimented with a dummy variable for the 1999–2000 "bubble" period. However, this variable was highly correlated with MSCI and was therefore dropped.
12. The EVCA index includes many factors, such as the regulation of pension funds and insurance companies' ability to invest in private equity and venture capital, tax transparency for domestic and nondomestic investors, the ability to avoid permanent establishment for international investors from treaty or nontreaty countries, the presence of fiscal incentives for investors to encourage investments in private equity and venture capital and for young and innovative companies in their early development phase, the ability to avoid paying a value-added tax (VAT) on management charges and/or carried interest, the degree of restrictions on investments, the presence of performance-related incentives for fund managers, the rate of corporate taxation on profits and dividends, the rate of corporate taxation for small and medium enterprises, the ability to deduct net interest expenses by private equity–backed companies, the capital gains tax rate and the income tax rate for private individuals, and stock options taxation and fiscal R&D incentives.
13. In order to distinguish between highly leveraged versus low leveraged deals, I considered the top 25 percent and the lowest 25 percent of the distribution of the values of the variable LEV among sample firms.

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CHAPTER 12

THE LIMITS OF PRIVATE EQUITY: EVIDENCE FROM DENMARK

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In Denmark, as well as in the rest of Europe, private equity funds play an increasingly important role as buyers of firms where the existing owners wish to sell. These friendly takeovers have more often than not created constructive transmissions of firms; success follows (see Cumming et al., 2007 for a review of recent empirical evidence). However, private equity ownership is no free ticket to value creation. The funds can be mistaken in their investment or in their investment case. Moreover private equity funds' bias toward financialization of target firms means that it is not appropriate for all firms. Value creation ultimately depends on a good match between the owners and the firms as well as qualified execution of the ownership.

Research in financial economics has uncovered a range of hypotheses about value creation by private equity funds. Without detracting from the value of these hypotheses, it is clear that they almost exclusively rely on the assumption that if some structure is changed, performance will automatically follow. While it is relatively easy to measure changes in structure, it is more difficult to measure how these changes influence behavior, which is very important when the expected effect does not appear. In this chapter we use a focal case study to develop a theory of what constitutes a good match between owner and firm.

When there is not a good match between owner and firm, we consider the risk of expropriation of stakeholders, and in particular employees, to be higher

than usual. When the poor fit becomes evident and the new owner must make substantial transaction-specific investments upon entering the relationship, and when the situation is sufficiently complex that some elements of the transaction must initially be left unspecified and dealt with according to experience, the poor fit becomes locked in (Hansmann, 1988).

Expropriation is one way to create value for a private equity fund locked in a poor fit, which then breaks implicit contracts with employees and gains by a more narrow-minded focus on shareholder value (Shleifer and Summer, 1987; Marais et al., 1989; Renneboog and Simons, 2005). Because private equity ownership is temporary, the potentially negative effects of exploitation (rather than exploration) are mitigated. The obvious question here is to what extent this strategy is consistent with long-term value creation.

It could be argued that an attempt to cast contemporary developments as a financialization of the target firms is a non sequitur, because this view ignores what private equity funds actually (should) do: skillfully engage the complex alliance between managerial and operational employees, on the one hand, and the large institutional investors that own today's public firms, on the other hand.

For example, Jensen (1989) argues that private equity funds' leveraged buyout transactions are the manifestation of powerful underlying economic forces that are productive for the economy. This is based on the active investor who "actually monitors management, sits on the boards, is sometimes involved in dismissing management, is often intimately involved in the strategic direction of the firm, and on occasion even manages it" (36).

Somewhat contrary to this agency argument, Froud et al. (2004) and Froud and Williams (2007) suggest that financialization represents a more general phenomenon wherein the large institutional investors reallocate value at the expense of other stakeholders. Central to private equity funds' application of agency theory is a notion of shareholder and property rights supremacy that in some cases may neglect the value of the organizational asset created by key stakeholders (Wood and Wright, 2009; Zingales, 2000). Ample empirical evidence supports the view that this "bobble of supremacy" may create short-term value, but in some cases it may simply cannibalize long-term value, making a profitable exit difficult.

It could also be argued that whatever private equity funds actually do,[1] the boilerplate of private equity appears to be one largely set by path dependencies, and path dependency theory recognizes that efficient outcomes may be hindered by the initial structure set by the parties: the optimal structure becomes suboptimal or unintentionally suboptimal structures remain suboptimal.

In this chapter we argue that expropriation of stakeholders, and in particular employees that have made firm-specific investments, can be a suboptimal strategy that leads to counterproductive and ultimately value-destroying behavior. We see this as a consequence of path dependency in private equity firms' choice of investment decision rule. We draw some inferences about this from the buyout of Royal Scandinavia, a Danish art industry conglomerate. With this case, we are capturing some of the fallacies of thinking about power as an operation rather than a resource. At the end we summarize some learning points as propositions for future research and practice.

Theory

The literature on private equity is quite biased, in that it identifies arguments for why private equity might be value-creating but not really why it might be value-destroying, and it is not clear that unsuccessful adoption of arguments for value creation is directly value-destroying. Table 12.1 offers an overview of existing research propositions concerning value effects of private equity funds. Recent detailed

Table 12.1 When Do Private Equity Funds Create or Destroy Value?

Proposition	Argument
Undervaluation	Private equity funds are experts in valuation. They can spot undervalued companies and know when and how to sell them again. Funds are able to find undervalued companies (exploit market mispricing) and to understand the value drivers in the individual company.
Financial gearing	Private equity funds work by increasing leverage. Debt is used as a governance mechanism to prevent managerial moral hazard. Moreover private equity funds can benefit from financial market conditions under which they substitute cheap debt for expensive equity capital.
Instability	One cost of increased leverage is increased financial risk, which is of course more troublesome in disorderly business environments.
Management replacement	Private equity funds make money by taking over badly managed companies, replacing the management team, and reaping the benefits.
Restructuring	Private equity funds break up, close down, and sell off unprofitable or unrelated business units.
Expropriation of stakeholders	Private equity funds gain at the expense of employees, creditors, suppliers, tax authorities, local community, society, and other stakeholders.
Corporate governance	Private equity funds introduce a new, more efficient governance model based on concentrated, active ownership, value-creating boards, financial leverage, and high-powered managerial incentives.
Management incentives	Private equity mitigates incentive problems by requiring management to make substantial private investments in the firm.

Sources: Based on Vinten and Thomsen (2008), we list a number research propositions concerning value effects of private equity funds identified in the literature. We also refer to the recent detailed reviews available in Cumming et al. (2007), Kaplan and Stromberg (2009), and Wright et al. (2009).

reviews are available in Cumming et al. (2007), Kaplan and Stromberg (2009), and Wright et al. (2009).

In this section we search for the limits of private equity and try to rationalize why it may not always be the best option by looking at the path dependency in the funds' choice of strategy and investment decision rule. The investment decision rule is important, because it tells us something about the owners' objective with their ownership. Most investment decision models are formulated on the basis of certain assumptions regarding investors' preferences combined with the assumed objective of expected utility maximization.

In finance the standard investment decision rule is to accept all projects with a positive net present value. This rule returns more than the minimum required rate of return on the investment. Among these projects, the first and best solution is always to invest so as to maximize the net present value. Private equity funds, like all other value-maximizing investors, submit themselves to this kind of rationality.

Over time a number of generic strategies have proved to provide this value maximization, or at least very high returns on investments. In spite of obvious shortcomings, the success of these strategies has created a path dependency that, on the whole, remains uncontested. This dependency originates from the premise that private equity funds have to make decisions about which firms to buy based mainly on publicly available information (or break insider trading laws). As a result of this lack of firm-specific information or experience, they tend to rely on generic strategies. However, over time competition, hubris, and so on may cause them to "push the envelope" to gain new experience.

According to upper echelons theory, the actual strategy choice will at least to some extent reflect the demographic characteristics of the decision makers. Following Finkelstein (1992), we would expect to see a change of strategic cognition following the competencies of private equity funds in financial management. We would thus expect to see more attention to valuation maximization in companies owned by private equity funds (e.g., Jensen et al., 2006; Jensen, 1986a, 1986b, 1989, 2007).

Private equity funds have a predictable profit focus that historically has been well executed in standard industries with mature firms. In nonstandard industries, where employees control critical, unique inputs, long-term value creation may be found in an alternative classification of investment projects, for instance by the type of benefit to the firm (e.g., an indirect or nonpecuniary benefit) instead of something directly related to return. According to this theory, a firm can rationally choose the least profitable investment if it compensates with sufficient indirect or nonpecuniary benefits.

Note that this is not necessarily at odds with value maximizing. This logic of investing below the maximum net present value but above zero net present value endorses an idea that seems to recognize that you can make money only up to the day you become irrelevant and acknowledge that, in such firms, it is the employees that bring the system to life. Their labor is not simply a means to another end

(Sennet, 2008). Failing to understand this presumably causes a counterproductive and ultimately value-destroying inertia.

Thus we propose that expropriation of employees, by forcing a certain investment decision rule on them, although supposed to create value, might end up doing exactly the opposite, and that this is likely to happen if a nonstandard firm (high asset specificity and valuable organizational assets) is approached with a generic strategy.

In firms where employees' firm-specific investments are crucial, a better device to enhance the congruence of objectives of a firm and its employees might be to grant employees' participation schemes to share ownership. Jones and Takao (1995), for example, find that employee productivity increases following the adoption of employee share ownership plans, and Kim and Paige (2007) find that such plans often allow some kind of collusion between managers and employees at the expense of shareholders. The latter is in line with the zero-sum game between ownership rights and those of other stakeholders described in Djankov et al. (2003).

Breach of Implicit Contracts

From a nexus of contracts perspective, it appears there is an inherent inconsistency in the private equity model. On the one hand, the model views the firm as a nexus of explicit contracts, where shareholders are the only ones who bear the costs of decisions, and where the firm thus should be run so as to maximize their value. On the other hand, for control rights to be valuable, as we know they are, shareholders must be able to make decisions that alter the distribution of payoffs among the other members of the nexus, which implies that other stakeholders besides shareholders are not fully protected by explicit contracts (Zingales, 2000).

The private equity model silently appreciates the implicit contracts between shareholders and stakeholders (first introduced by Coase, 1937) and recognizes that they are necessary to promote relationship-specific investments by the latter (Williamson, 1985). An important characteristic of these contracts is that they often specify actions that ex-post reduce firm value, even though agreeing on these actions is ex-ante value maximizing (Shleifer and Summers, 1987). For instance, shareholders might gain from refusing to compensate an employee for making firm-specific investments (e.g. perfecting the craft of hand-painting) after this has been done.

If upholding implicit contracts becomes a liability to incumbent shareholders who are not willing to realize the profit potential in a breach, the firm becomes a prime target for private equity. A buyout allows the fund to appropriate stakeholders' ex-post rents in the implicit contracts. Breach can therefore raise shareholder wealth, and the more it does, the greater is the burden of fulfilling past implicit contracts.

As mentioned earlier, efficient bargaining between the fund and the target may be hindered by the initial structures; the optimal structure becomes suboptimal, or

unintentionally suboptimal structures remain suboptimal. The former is likely to dominate in private equity deals. Private equity funds appear as temporary owners in firms, where implicit contract structures are well established, without being bound by these commitments. In fact they are enticed by the short-run gains from breaching such contracts (Pagano and Volpin, 2008), maybe without fully recognizing the potential efficiency loss from breach of implicit contracts.

Shleifer and Summer (1987) argue that the magnitude of the efficiency loss depends on whether conditions needed for the Coase theorem to hold obtain. If they do, breach is simply a transfer from stakeholders (employees) to shareholders. If they do not, it entails some ex-post inefficiencies, and the source of these inefficiencies is the failure of the Coase theorem in the ex-post environment.

The Coase conditions vary, but ultimately have to do with wealth creation. If private equity funds breach implicit contracts, because more efficient (in many cases this translates into cheaper) alternatives are easily accessible, as is often the case in mature low-technology firms, which they usually invest in, then this is a reasonable net wealth-creating strategy. This is not the case, however, if they fail to recognize the valuable organizational asset embedded in implicit contracts, where these exist. We expect the fear of exploitation to increase with the magnitude of firm-specific investments and the attendant quasi-rents, and that fear grows with the deterioration of trust.

Cuny and Talmor (2007) set up a model from which it can be inferred whether transferring ownership to private equity prior to implementing a turnaround is an optimal solution. Although the model does not fit our argument perfectly, one could easily modify it. The main idea is to recognize that a principal (the private equity fund), by allowing the possibility of change, shows lack of confidence in the agent (the employees), which in itself generates emotional friction between the agent and the principal, lowering future corporate performance. If the agent subsequently realizes that implicit contracts are broken, friction increases. Another way to think about this is as a depreciation of the value of organizational assets that reduces the expected gain. If the emotional friction cost is large, it may be suboptimal to invest.

Empirical Results

Public firms operate in the public spotlight, which creates pressure for them to carry out business in a socially responsible manner. However, when a large public firm is bought by private equity it typically vanishes from the public sphere. To get past this limitation and investigate the postbuyout process of value creation, in particular the above proposition, we interviewed some of the important parties

from the buyout of Royal Scandinavia, a Danish art industry conglomerate, by the Danish private equity fund Axcel.[2] As always with interviews, the content of our talks sets the premise for our analysis. There is little additional material to supplement our analysis. Thus the picture may be incomplete, but the analysis is relevant and valid in itself.

When relevant, we juxtapose our findings with established statistical generalizations to check for consistency. It is hard to gauge the efficiency consequences of Axcel's acquisition. A lot of things suggest that things needed to be done, and now the luxury goods markets, where both remaining firms operate, suffer from the economic downturn, making an exit even more difficult.

Royal Scandinavia

In this subsection we present some details of the buyout of Royal Scandinavia. We consider this to be an example of a poor fit between owner and firm, where the announced intentions were abandoned, implicit contracts were broken, and employees consequently expropriated. One might call it a fait accompli on the employees.

In 2001, when Royal Scandinavia was taken over by Axcel, it was an art industry conglomerate with strong international brands, among them Royal Copenhagen (porcelain); Georg Jensen (silver); Holmegaard, Orrefors, Kosta Boda, and Venini (glass); and Höganäs and Boda Nova (ceramics). Today, still owned by Axcel, Royal Scandinavia is reduced to a financial holding company; its major assets comprise Georg Jensen and Royal Copenhagen.

To get a sense of the heritage in these remaining firms, we cite from Georg Jensen's website: "Inspired artistic and talented craftsmen have carried on the tradition of unique design language, craftsmanship and superior quality which remain the cornerstones of Georg Jensen today." Something similar can be read about Royal Copenhagen, the core of Royal Scandinavia. The firm was founded in 1775 by Danish Queen Juliane Marie and her son Crown Prince Frederik together with pharmacist Frantz Heinrich Müllers with the objective of producing fine china. From its inception, it was thus concerned with products rather than profits.

These firms are highly dependent upon the unique competencies of their employees and unique brands with customer loyalty (high degree of asset specificity), acquired through long periods of significant firm-specific investments, where implicit contracts indeed exist, in part to capture the ex-ante division of ex-post rents.

The Buyout and Beyond

After a moderate bidding contest, Axcel acquired a controlling stake in Royal Scandinavia (transaction data are from the Zephyr database). Under the terms of

the agreement, Carlsberg sold a 36.9 percent stake in the firm. Carlsberg retained a 28 percent stake, which it transferred into the buyout company, Royal Scandinavia Holding. The consideration paid to Carlsberg consisted of DKK 1.2 billion plus DKK 500 million in repayment of loans to Carlsberg (roughly EUR 250,000). The buyout company made a successful public offer that was recommended by the board for the remaining publicly held shares. No premium was offered. After completion, Axcel had a 51 percent stake in the buyout company, Carlsberg had 28 percent, and the Rausing family had the remaining 21 percent.

Axcel purchased the conglomerate with the declared intention that it would continue to invest in the development of Royal Scandinavia. The announced intention with the sale is stated in a press release of December 22, 2000: "It is important for Carlsberg to sell its shares to an owner, who collectively buys all assets and who will continue to invest in the development of Royal Scandinavia," said Flemming Lindeløv, CEO of Carlsberg. Lindeløv was first active as seller (CEO of Carlsberg) and then became CEO of the acquired unit (Royal Scandinavia), despite obvious potential conflicts of interest. According to the strategy plan for Royal Scandinavia, the new owners should expand the firm's strong position in Scandinavia, the United States, Japan, Italy, and Germany, and emphasis should be put on revenue and core competences in the individual business units.

"Royal Scandinavia is the leading Scandinavian art industrial firm with a strong position and strong brands within porcelain, jewelry, watches, and glass—a position that we wish to maintain and develop with respect for the individual firms' history and traditions. At the same time, Royal Scandinavia has good opportunities for further growth, both organic, by acquisitions and by strategic alliances, which is why we consider this firm as an investment with a good potential," said Christian Frigast, CEO of Axcel.

Axcel's philosophy of active ownership, as stated in their latest annual report and on their corporate website, has remained uncontested and therefore serves as a yardstick for the announced intentions:

> Prior to acquiring a company, Axcel outlines a general plan for what is going to happen to the company. The plan will not only describe possible add-ons, growth opportunities, and product development, but also how to maintain management and employees.
>
> Once the investment becomes a reality, a detailed process clarifying how the company is to be developed is carried out. We call it the "100 days' plan," as we aim to have concluded our development plan for our entire ownership period within the first months after our takeover. And also because we know from experience that people in the company feel very motivated and open towards new measures in the company just after takeover. (Link 1)

As we later learned, the new owner reversed the strategy of the old owner following a generic strategy of breaking up the conglomerate, selling off assets and business units and cutting jobs. Most brands were sold off, and in 2005 only Georg Jensen and Royal Copenhagen were left. Common administrative functions such

as IT and accounting were moved to the individual firms, and ultimately Royal Scandinavia ended up as a financial holding company. In 2008 the retrospective message from managing partner Nikolaj Vejlsgaard of Axcel was this: "It was clear to us that Royal Scandinavia was rich in assets but poor in earnings. And there were no obvious synergies. Or at least they hadn't been realised" (DVCA, 2008, 60). Table 12.2 shows the steps taken to deconstruct the conglomerate.

This strategy is interesting considering the study by Nikoskelainen and Wright (2007). Using a data set of 321 exited buyouts in the United Kingdom in the period 1995–2004, they find that governance mechanisms resulting from a leveraged buyout are not the main drivers of value increase, but that returns are driven by size of buyout and acquisitions done before exit. Their results show that buy-and-build strategies are common among leveraged buyout firms. Their results imply that acquisitions are mainly used as a mechanism to increase scale to ensure lower risks associated with the investment. They also show that buyout equity returns are negatively impacted by disinvestments, whereas the opposite is true for buyins, which "implies that private equity companies that initiate institutional buyins are able to drive their returns through streamlining of target company operations" (514).

The restructuring of Royal Scandinavia became a regular atrocity: the number of products was cut dramatically, from 4,400 to 300 (to the dismay of many collectors of traditional design series); production was moved and historical property was sold off (and sometimes leased back); a growing share of production was outsourced to Thailand (production is now 65 percent outside Denmark); production processes were streamlined (contrary to tradition, employees were forced to specialize); 900 employees were laid off and many more sold off as part of divestitures;[3] and inventories were reduced (streamlined working capital but reduced product availability caused long delays for shops and customers). The net result of these adjustments was a series of deficits.

Considering the length of the investment period (a decade and counting), specifically that it has not yet been possible or profitable to exit the investment, this

Table 12.2 Deconstruction of the Conglomerate

Prior to the Buyout	Subsequently	Status
Royal Copenhagen Bing & Grøndal Holmegaard	Royal Copenhagen	
George Jensen	Georg Jensen	
Orrefors Kosta Boda	Orrefors Kosta Boda	Sold in 2005 to New Wave Group
Illums Bolighus	Illums Bolighus	Sold in 2005 in a MBO
BodaNova Höganäs	Boda Nova Höganäs	Sold in 2002 to iittala
Venini	Venini	Sold in 2001 to Italian Luxury Industries

strategy does not appear to have created sufficient value. This is interesting to look into when considering that Barclay et al. (2007, 462–463) find that "buyers who signal their intention to be active in the firm are greeted much more favorably than those who do not," and that "with these active placements there is no long-run stock-price decline." We propose that it has to do with the breach of implicit contracts caused by the strategy revision, a maneuver that caused Carlsberg and the Rausing family to sell their remaining shares and leave the firm in 2006.

Because of their nature, implicit contracts are difficult to assess empirically. There are, however, some potential value-reducing implications of breaching implicit contracts. Poor ex-post performance therefore offers some circumstantial evidence of the value loss of the organizational asset (the correlation may be spurious, though). Before turning to some consolidated key financials for Royal Scandinavia, which to some extent is supposed to show the net effects of all undertakings of the new owner, we look at the changes in the board of directors and CEO, as these are the owner's gateways to strategy implementation.

Table 12.3 shows the composition of the boards of directors and the incumbent CEO in the years before and after the buyout. In the holding company, the new board was, not surprisingly, dominated by members representing the new owner. To lead the transition, Christian Frigast, CEO of Axcel, was immediately appointed chairman of the board, but he was soon replaced by Poul Plougmann, who was at the time vice CEO of Lego and who continued as chairman until 2003, when the structure was changed so that each firm got its own board, with an explicit focus on having relevant competences represented. Later, when Royal Scandinavia became a pure financial holding company, the board was slimmed. Altogether this is not surprising, although management replacement rates in Royal Scandinavia and its subsidiaries appear to be somewhat above average.

These changes might explain some of the buyout's lack of success. Analyzing the differences between management buyouts and management buyins, Amess and Wright (2007) present results consistent with the notion that management buyouts lead to the exploitation of growth opportunities. The same patterns do not emerge from management buyins, typically because these transactions involve firms that require considerable restructuring. It is difficult to characterize the case of Royal Scandinavia as either one or the other, but considering the instant change in management (new CEO and substantial replacement of board members), it might fit the characterization of a management buyin best. Considering the strategic turmoil and uncertainties surrounding the need to restructure, growth opportunities might have been missed.

Table 12.4 shows some key figures from the annual report in the years before and after the buyout. We start by looking at leverage, which, as a governance mechanism, is supposed to create a sense of urgency that increases efficiency and reduces financial slack (Jensen, 1986a, 1986b). Debt financing may well be the most important characteristic of private equity funds and their chief source of value creation (at least historically). While debt financing is not necessarily a problem, it has spurred much public debate, and this debate is to some extent justified, as too aggressive borrowing can render firms and economies at large more vulnerable in

Table 12.3 Management in Royal Scandinavia

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
−3	−2	−1	0	1	2	3	4	5	6
Panel A: Board of Directors									
Flemming Lindeløv	*Flemming Lindeløv*	*Flemming Lindeløv*	*Christian Frigast*	Christian Frigast	Christian Frigast	Christian Frigast	Christian Frigast	Christian Frigast	Christian Frigast
Walther Paulsen	Walther Paulsen	Poul Matthiesen	Walther Paulsen	Walther Paulsen	Walther Paulsen	*Walther Paulsen*	*Walther Paulsen*	*Walther Paulsen*	*Erik D. Jensen*
Poul Matthiesen	Poul Matthiesen	Niels Wilhjelm	Niels Wilhjelm	*Poul Plougmann*	*Poul Plougmann*		Nikolaj Vejlsgaard	Nikolaj Vejlsgaard	Nikolaj Vejlsgaard
Poul Svanholm	Conni Jonsson	Kurt Augustsson	Kurt Augustsson	Kurt Augustsson					
Hans Nielsen	Hans Nielsen	Jan Frøshaug	Jan Frøshaug	Jan Frøshaug	Jan Frøshaug				
Jens Werner	Jens Werner	Jens Werner	Jens Werner	Hans K. Højsgaard	Tuve Johannesson				
	Lisbeth K. Rausing		Jørn Jensen	Jørn Jensen	Jørn Jensen	Jørn Jensen			
Panel B: CEO									
Knud O. Pedersen	Knud O. Pedersen	Knud O. Pedersen	Flemming Lindeløv	Flemming Lindeløv	Flemming Lindeløv	Flemming Lindeløv	Erik D. Jensen	Erik D. Jensen	Poul Ravn Christensen

Source: Bennedsen et al. (2008).

Table 12.4 Key Figures for Royal Scandinavia

Year(calendarear)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Year (after buyout)	**−3**	**−2**	**−1**	**0**	**1**	**2**	**3**	**4**	**5**	**6**
Income statement										
Revenue	2,076	2,186	2,559	1,472	2,248	1,966	1,998	1,715	1,332	1,368
EBITDA	174	163	203	−138	40	−93	−83	15	51	138
Balance										
Assets	2,467	2,669	2,851	2,888	2,514	2,030	1,991	1,498	1,477	1,295
Equity	1,613	1,616	1,596	367	436	319	367	584	538	547
Debt	−2	6	−9	1,471	1,100	799	740	436	524	246
Growth (%)										
Revenue		0.05	0.17	−0.42	0.53	−0.14	0.03	−0.14	−0.22	0.03
EBITDA		0.04	0.25	−1.22	−1.87	−3.23	−0.54	−2.05	0.33	1.73
Assets		0.08	0.07	0.01	−0.13	−0.19	−0.02	−0.25	−0.01	−0.12
Gearing										
Debt/EBITDA	−0.01	0.03	−0.04	−32.69	28.21	−9.19	−18.50	10.39	9.35	1.78
Debt/Equity	0.00	0.00	−0.01	4.01	2.52	2.51	2.02	0.75	0.97	0.45

Note: Millions of DKK. 2001-number only covers 9 months. Debt is net interest-bearing debt.

Sources: Annual reports. From 2007 consolidated accounts are no longer available (Royal Scandinavia is included in Axcel's consolidated accounts); hence this year's numbers are based on data from Axcel.

a downturn, among other things by endangering the competitiveness of portfolio firms (PES, 2007; Ferran, 2007).

We see that the capital structure did change dramatically, although not spectacularly for a private equity–backed leveraged buyout: the debt-equity ratio changed from around 0 to around 4. An interest-bearing debt of some DKK 1.5 billion has now been reduced to some DKK 245 millions, but, because of sale of properties and reduction in working capital (primarily inventory), assets are also reduced considerably. We have no reason to suspect, however, that debt per se has damaged the effectiveness of the implicit contracts, contributing to negative EBITDA (earnings before interest, taxes, depreciation, and amortization) values (although lack of improvements in cash flow does constitute a separate problem with maintaining high debt ratios). Breach of implicit contract is probably more at fault.

Irrespective of how it is made up, the buyout has not been a success, although the net margin has risen over the period and the results seem to be improved in the later years. The potential in the strong brands, which are so important to this industry, was not fulfilled under the new ownership, and profits were replaced by a long period of deficits. The recent ostensible success has partly been forced through sales of those firms that caused most noise about the strategy reversion. Thus value creation was partly expropriated from the employees.

According to Nikolaj Vejlsgaard, however, revenue and earnings have grown in the remaining two firms. In Royal Copenhagen the balance between commercial and artistic interests has been shifted toward the commercial. Sales and marketing are being prioritized so that the product portfolio reflects the expected sale more than historic and artistic views. These changes have obviously been difficult and costly for the firm, and explain the large deficits in the beginning of the period. It has not been without loss of customers either; however, productivity has increased considerably.

In contrast to Royal Copenhagen, Georg Jensen had surplus over the entire period. There was positive growth in revenue as well as profit, although earnings were volatile. The firm was also restructured after the buyout, and a great deal of the production was outsourced to Thailand. The firm's product assortment was expanded, with more expensive up-market products on the border of the firm's traditional competencies and market segments, but this strategy was reversed in 2007, when CEO Hans-Kristian Højsgaard, brought in from German luxury goods producer Lancaster Group in 2003, was replaced by Ulrik Garde Due.

Conclusion

Private equity funds have repeatedly broken the mold, acquiring firms previously thought unsuitable for this type of ownership. This chapter searches the limits of

private equity and aims to contribute to the literature on postbuyout processes of value creation. We have argued that private equity in its traditional, shareholder value-maximizing form may be unsuitable for some firms, and we have drawn inferences from the buyout of the Danish art industry conglomerate Royal Scandinavian.

It is arguable why the case presented in this chapter caused problems. One reason is likely to be that Royal Scandinavia is a complex firm, where traditions, artists (designers), craftsmanship, and national preferences are very important. Maybe the firm would have had difficulties in any case. However, in retrospect, the investment case seemed too optimistic. Maybe the inertia in such an old and traditional firm turned out to be a larger challenge than expected. Neither can we reject that some aspects of the buyout were erroneously approached, especially where we have focused, on breach of implicit contracts. The strategy revision represents a breach of trust in the initial statements; it has caused internal problems and inertia and surely reduced the important firm-specific investments.

Royal Scandinavia was clearly not a typical private equity case. There was no high, steady cash flow in the firm, and debts had to be serviced through sale of properties. The firm does not produce standard goods but has strong brands that require large investments to develop. The firm's craftsmanship and artistic traits mean that production and development are difficult to industrialize and leverage. Besides, working in a firm with more than two hundred years of culture and tradition (Royal Copenhagen) might require more time and sensitivity than private equity funds are able to give.

We close this section with a quote by Christian Frigast, CEO of Axcel: "It means a lot to us who buys. It is important that the firms end up with an owner, where they can be further developed. The price is important, but I would like to stress that the new owner has to earn the firm's trust" (quoted in Hansen, 2008, 4).

What Have We Learned from This Case?

Following are some learning points as propositions for future research and practice:

1. Age and tradition can reduce the efficacy of private equity, because the inertia and historical consciousness of old organizations are likely to clash with the urgency emphasized by private equity. Tradition may be closely tied to a company's legitimacy and so cannot easily be changed overnight.

2. Organizations in which organizational capabilities to a large extent reside in tacit knowledge among skilled laborers may be less suited to private equity, because employees have great bargaining power over quasi-rents.

3. Artisan industries may be less suitable for private equity, because many participants tend to see the artistic aspect as a goal in itself, which naturally reduces their incentive to focus on profit and shareholder value maximization.

4. Industries characterized by quality uncertainty may also be less suitable for private equity, because profit seeking implies an incentive to shirk on unobservable aspects of quality (e.g., artistic quality).

5. To some extent private equity funds can overcome information asymmetries by specialization and experience. Venture funds, for example, have learned to work with researchers and patents despite the idiosyncrasies. However, it may be that the appropriate time horizon for such investments is longer than the three- to seven-year ownership period most buyout funds aim for.

6. Within the established private equity business paradigm, we conjecture that equity funds are probably better off focusing on standard commodities, scalable production, high volume, and substitutable labor.

These learning points should not be regarded as findings; being based on a single case study, they have limited general validity. Nonetheless a single case, an outlier such as Royal Scandinavia, is sometimes valuable for generating new ideas.

Notes

1. Whatever it is that private equity funds actually do, it has resisted at least three major crises: the junk bond market collapse in 1990; the crises in Asia, Russia, and LTCM in 1997–1998; and the stock market collapse in 2000–2003.
2. We are thankful for interviews with Christian Frigast (CEO, Axcel), Nikolaj Vejlsgaard (managing partner, Axcel), Walther Poulsen (former board member, Royal Scandinavia), and Peter Lund (former CEO, Royal Copenhagen). Axcel is a Danish private equity fund founded in 1994 and now has a wide range of Danish and international investors. Its focus is on medium-size companies in Denmark and Sweden. Since its establishment, it has invested a total of DKK 6.6 billion via three funds. With thirty-five investments and eighteen exits so far, the company has made more investments in medium-size Danish companies than any other private equity fund in Denmark. Current investments comprise seventeen companies in widely differing sectors, with an overall turnover of approximately DKK 12.5 billion and approximately 9,000 employees. The fund has twenty-seven employees. Apart from the Axcel´s successfully raising money for three funds, we have no objective way to access its performance relative to the private equity industry or other benchmarks.
3. This does not seem to be the general case, though (Bacon et al., 2004, 2008). Amess and Wright (2007) find that private equity–backed buyouts do not have significantly different levels of employment compared with control firms, although specifically in the context of public-to-private transactions, Weir et al. (2008) find reductions.

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PART V

FINANCIAL EFFECTS OF PRIVATE EQUITY

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CHAPTER 13

PRIVATE EQUITY: VALUE CREATION AND PERFORMANCE

CHRISTIAN GRAF, CHRISTOPH KASERER, AND DANIEL M. SCHMIDT

Abstract

This chapter is devoted to analyzing and understanding the value creation of private equity and to giving a comprehensive overview of the performance of private equity transactions. We analyze a total of 10,328 private equity deals. Among them are 3,296 pure buyout transactions. The average gross of fees IRR (multiple) of all private equity transactions in our sample is in the range of 10 to 50 percent (1.8 to 4.2), while for pure buyout transactions it is in the range of 8 to 70 percent (1.8 to 7.0). The average excess IRR (PME) is in the range of 2 to 48 percent (1.5 to 3.6). It is the primary focus of this paper to contribute to the literature on value drivers in private equity transactions. We introduce a new perspective on how to analyze the key drivers of value creation of private equity. It is our goal to isolate the impact of market timing, leverage, and operational improvements on transactions returns. While this may not be a big issue as far as market timing effects are concerned, it is often not possible to eliminate leverage effects because of the lack of detailed transaction data. Therefore we additionally focus on transactions in the financial institution industry. Because of tight regulation we assume that leverage can be managed only within a very limited range in these companies. On this basis we present evidence that roughly 90 percent of value creation in financial industry transactions are due to operational improvement. Moreover by showing that transaction and market timing returns do not significantly differ among the different industries, we give some indirect evidence that operational improvements may be the primary value drivers in the other industries as well.

Despite the ongoing developments in the field of private equity and an emerging literature, little is known about value creation of private equity. The main obstacle for detailed value creation analyses is the lack of detailed transaction data as private equity firms are largely exempted from disclosure requirements. Recent court rulings in regard to the U.S. Freedom of Information Act improved the situation and pressured U.S. public institutional investors, who are among the largest private equity investors in the world, to disclose their private equity performance data. For example, the California Public Employees' Retirement System (CalPERS), the world's largest investors in alternative assets, with a current exposure of roughly $50 billion, now discloses fund performance data for each of its affiliated private equity investments. The disclosed data, however, are too aggregated to obtain information on drivers of value creation or to carry out industry-specific performance analyses. Large-sample value-creation analyses require additional information on investment horizon and transaction structure in order to conclude which factors are contributing to the observed performance.

For our research, we have access to a unique data set of detailed cash flow figures collected by CEPRES and covering a total of 29,121 private equity deals worldwide.[1] The analyzed cash flow data are available on a transaction basis and cover additional characteristics, such as industry classification and investment horizon. Another distinguishing feature is that among the sample of all private equity deals we have identified 3,296 pure buyout transactions.

The research presented in this paper aims at extending the literature in two directions. First, we present detailed cash flow–based performance analysis of private equity deals. It should be noted that starting with Kaplan's (1989) study there has been a relatively vast literature on the financial performance of leveraged buyout (LBO) transactions.[2] This literature, however, is mostly focused on U.K. and U.S. transactions carried out in the 1980s or 1990s. Moreover in most cases only a rather small number of large buyout transactions are analyzed. Only recently have papers emerged covering a more recent set of private equity transactions (see Cumming and Walz 2010; Guo et al. 2010).

Second, there is still a need to understand the value creation of private equity transactions in more detail. In fact in a recent overview article Kaplan and Stromberg (2009, 133) wrote, "The performance of leveraged buyouts completed in the last private equity wave is clearly a desirable topic for future research." In this paper we propose a new framework to analyze the key drivers of value creation in private equity transactions, that is, to differentiate the value impact generated by market timing, leverage, and operational improvements. For that purpose we identify an industry, the financial institution industry, where, due to capital adequacy regulation, leverage is more or less fixed.[3] By sorting out performance impacts coming from changes in the market valuations, we find that operational improvement is the major driver for value creation in this particular industry. It accounts for roughly 90 percent of total returns. Moreover by showing that absolute and market-adjusted transactions returns as well as market-timing impacts do not significantly differ among the different industries, we present evidence in accordance with the presumption that operational improvement should also be the major value driver in the other industries.

The paper proceeds as follows. First we present a literature overview is presented, then the data set. Next we describe the research framework, followed by the results. After the results we present a summary of the findings and an outlook on possible future research.

Related Literature

Private equity has become an increasingly important pool of capital in the global financial system, evolving from a global buyout fundraising volume of $75 billion in 1997 to a peak of $391 billion in 2007.[4] In recognition of the rising importance of private equity for the overall economy, research in the area of private equity increased simultaneously over the past few years.

As already explained, this paper relates to two strands of literature. The first deals with the analysis of the financial performance of private equity deals, while the second investigates the economic drivers of these deal returns.

It has been pointed out that only very few papers exist that analyze the financial performance of private equity transactions on a large sample basis. Cochrane (2005) analyzes 16,638 private equity transactions, coming up with an average arithmetic return of 59 percent. It should be noted that his sample consists mostly of venture capital financing rounds. Cumming and Walz's (2010) study is also mostly based on venture capital. By using a data set provided by CEPRES they find an average mean transaction return gross of all fees of 69 percent on the basis of 2,419 transactions. As opposed to these studies, Guo et al. (2010) analyze a pure buyout sample. For a total of 90 buyout transactions they calculate a mean transaction return of 63 percent.

Ljungqvist and Richardson (2003) have access to detailed cash flow data of 54 buyout funds raised between 1981 and 1993. Using this data set, they calculate a mean excess internal rate of return (IRR) of 8 percent over the S&P 500. Kaplan and Schoar (2005) exploit a larger sample of 746 individual funds, which were collected by Thomson Venture Economics. The data were amended by additional data recently released by several large public limited partners such as CalPERS, the University of Texas Investment Management Company, and the University of Michigan in response to the court rulings in regard to the Freedom of Information Act. They find that during the sample period 1980–1997 average fund returns net of fees are more or less equal to those of the S&P 500.

The series of private equity performance studies is supplemented by a recent study of Lerner et al. (2007). They use Private Equity Intelligence's 2004 Private Equity Performance Monitor as their primary source for return data, which comprise more than 1,700 private equity funds. Based on this they find excess returns that are in magnitude comparable to the results of Kaplan and Schoar (2005).

Amendatory to these studies, Phalippou and Gottschalg (2009) draw an updated version of the data set used by Kaplan and Schoar (2005), now comprising 1,328 mature private equity funds. They find an average IRR of 12 percent. When correcting for biases in the accounting values, their findings indicate that the performance of private equity funds trails the performance of the S&P 500 by more than 3 percent per annum between 1980 and 1996. Similarly Diller and Kaserer (2009) find an average IRR of 13 percent by analyzing a sample of 200 mature European-based private equity funds. In their study it is also shown that private equity funds underperform the public stock market. Specifically they show that the public market equivalent is 0.96, indicating that the average return on a $1 investment in a private equity fund could have been duplicated by a 0.96 dollar investment in a stock market index.

In order to put these results in context, it should be noted that studies dealing with fund returns calculate net of fees returns, while studies dealing with transaction returns are in most cases gross of any fees. As this paper is driven by the question of whether private equity firms add any economic impact, we focus on transaction returns gross of fees.

As far as the second strand of literature—dealing with performance drivers of private equity transactions—is concerned, this literature was basically pioneered with the seminal paper of Kaplan (1989). He measured operational improvement of 48 large management buyouts between 1980 and 1986. He found that three years after the buyout, operational income and net cash flows increase, while capital expenditures decrease. The operating income, measured net of industry changes, is 24 percent higher in the third year after the buyout. The median net cash flow is 81 percent larger than in the last prebuyout year.[5] Additionally various hypotheses about the cause of operating changes are discussed by the author.[6]

Smith (1990) investigates the changes in operating performance of 58 buyouts of public companies completed between 1977 and 1986. She states that operating returns increase significantly from the year before to the year after the buyout as measured by operating cash flows per employee and per dollar of operating assets. Changes in the ownership structure and leverage effects are associated with the increase in operating returns.

There are several other studies dealing with LBO transactions mainly related to deals taking place in the United States or United Kingdom during the 1980s or 1990s. A comprehensive overview can be found in Cumming et al. (2007). A more recent study has been presented by Guo et al. (2010). By analyzing a sample of 192 buyouts completed between 1990 and 2006 they find that gains in operating performance are either comparable to or exceed those observed for benchmark firms. Furthermore they argue that multiple increases, associated with the operational performance, partly explain the performance of the investments.

Acharya et al. (2009) examine deal-level data of 66 private equity transactions in the United Kingdom between 1996 and 2004 and primarily concentrate on unleveraging equity returns and on extracting a measure of market outperformance. They

find that this average market outperformance is significantly positive and robust during sector downturns.

It emerges from this literature overview that the value drivers of private equity transactions have not yet been analyzed on the basis of a large sample. This is mostly due to the lack of detailed transaction data. In this paper we propose an approach to partially overcome this problem.

Data

The data set used in this paper contains information on 12,096 private equity transactions across all investment stages and industries between January 1973 and June 2008. The data were compiled anonymously by CEPRES from their members, private equity funds operating in North and South America, Europe, and Asia.[7] The information included in the data set can be described along three dimensions.[8] The first dimension relates to information on the private equity firm itself and specifies, among other things, the country of the main office, the number of investment professionals, and the capital under management. The second dimension focuses on the private equity fund and characterizes elements such as country and industry focus as well as fund size and investment-stage focus. The third dimension includes portfolio company specifications such as industry classification, investment and exit date, and country.

Besides these three dimensions, detailed cash flow data are reported. These data are reported gross of fees for each transaction and are not biased by any externalities such as management fees or carried interest. We employ this information to precisely calculate various absolute and relative return measures. As a result we avoid biased information from private equity firms concerning excess returns, and use our own public benchmark indices. This is a distinctive feature of our data set and sets it apart from other studies, such as Cochrane (2005), who uses proxy returns. We also do not have to deal with problems caused by not fully liquidated funds since our data set is measuring cash flow not on a fund level but on a single transaction basis. Moreover only fully realized and anonymized transactions are included in our data set due to strict confidentiality agreements between CEPRES and the respective general partners.

Looking closer at investment stages, the data set distinguishes eighteen categories and covers the whole universe of private equity investment stages.[9] As we do not mix the buyout investment stage results with early-stage venture capital results, we filter for leveraged buyouts (LBOs), management buyouts (MBOs), and management buyins (MBIs) at a later stage.

Another central characteristic is the industry classification of the portfolio company. These classifications are a prerequisite for measuring investment returns

against specific rather than broad benchmarks and to conclude on industry-specific returns. Entry and exit dates are also provided and are utilized in our market-timing model.

For this paper we adjust the data set by excluding transactions where the industry classification of the portfolio company is either not available or too aggregated to be used for benchmarking purposes. Moreover niche segments with a very limited quantity of completed private equity transactions are excluded. The remaining 10,692 private equity transactions are adjusted as follows.

As we are interested in discriminating between value impacts coming from either market timing, leverage, or operational improvement we exclude transactions with an investment horizon of less than a quarter. After that we are left with a sample size of 10,328 equity transactions, which we classify into twelve homogeneous industry clusters. The final sample consists of 6,079 U.S. transactions and 4,249 rest of the world (ROW) transactions. We additionally separate the relevant LBO, MBO, and MBI transactions from this sample. In the following we summarize these transactions under the term "buyout transactions" or "buyouts." This buyout subsample consists of 3,296 transactions.[10] An overview of this sample can be found in Table 13.1.

As already mentioned, to specify our general value-creation approach, we take a closer look at the financial institution industry and further detail these transactions. The financial institution industry is a large and heterogeneous segment comprising financial services such as depository services, mortgage banking services, consumer financing products, and trading services. Some of these businesses are more supervised by regulatory bodies than others, and some services are subject to tighter capital adequacy restrictions than others. Therefore we define "bank holdings" as the subsample of those companies that offer depositary services and hence are subject to capital adequacy regulations set forth by the Basel Committee on Banking Supervision and/or by national regulatory authorities. Besides banks and bank holding companies, mortgage finance companies, thrifts,[11] and consumer finance companies also match these criteria and therefore are classified as "bank holdings."

We mentioned that specific benchmarks rather than broad benchmarks are required to accurately evaluate the relative performance of private equity investments. In our case, industry-specific public indices are utilized to better reflect these characteristics and to ensure a maximum of transparency and comparability. This way industry cycles and dynamics are accurately taken into account in our relative performance analyses. We use Thomson Datastream, which covers a wide range of indices (see Table 13.2). These performance indices are covered for more than thirty years and are accepted as an industry standard for international benchmarking purposes. We concentrate on nine industry-specific benchmarks to balance precision of benchmarking and generalization of findings. The selected benchmarks provide daily time series of the index values as well as price-to-book (P/B) valuation ratios. The international scope of these benchmarks makes worldwide comparisons feasible.

Table 13.1 Overview of Transaction Sample

Portfolio Company Industry Segment	All PE Transactions (N)	U.S. Transactions (%)	ROW Transactions (%)	Buyout Transactions (N)	U.S. Buyouts (%)	ROW Buyouts (%)
Financial Institutions	*280*	*55*	*45*	*134*	*46*	*54*
Software, IT, & Internet	2,980	70	30	523	56	44
Industrials & manufacturing	1,472	41	59	750	22	78
Health care	1,466	69	31	315	46	54
Telecommunication	1,053	70	30	183	55	45
Consumer industry	858	45	55	461	25	75
Retail & textiles	596	42	58	334	25	75
Media	552	47	53	222	46	54
High-tech & semiconductor	486	74	26	113	50	50
Natural resources	247	49	51	75	15	85
Basic materials	193	39	61	93	19	81
Leisure	145	18	82	93	13	87
Total	10,328	59	41	3,296	35	65%

Notes: The table gives an overview of the utilized transaction sample provided by CEPRES, comprising 10,328 international private equity transactions (including early-stage investments) and 3,296 international buyout transactions. The table divides the overall transaction sample into our twelve homogeneous industry segments and differentiates between U.S. and rest of the world (ROW) transactions.

Methodology

Return Measurement

As a first return measure, we calculate the IRR of private equity investments in each of the twelve identified industry segments and perform cross-industry comparisons with the in-depth analyzed financial institutions and bank holding companies.

The IRR gives the discount rate, making the net present value of all cash flows equal to zero. Mathematically the IRR can be expressed as the solution to the subsequent equation:

$$\sum_{t=0}^{T} \frac{CF_t}{(1+IRR)^t} = 0$$

Table 13.2 Overview of Thomson Datastream Benchmark Indices

Segment of Portfolio Company	Corresponding Thomson Datastream Benchmark Index
Financial Institutions	*Financials Total Return Index Worldwide*
Software, IT, & Internet	Technology Total Return Worldwide
Industrials & manufacturing	Industrials Total Return Worldwide
Health care	Health Care Total Return Worldwide
Telecommunication	Telecom Total Return Worldwide
Consumer industry	Consumer Goods Total Return Worldwide
Retail & textiles	Consumer Goods Total Return Worldwide
Media	Consumer Services Total Return Worldwide
High-tech & semiconductor	Technology Total Return Worldwide
Natural resources	Oil and Gas Total Return Worldwide
Basic materials	Utilities Total Return Worldwide
Leisure	Consumer Services Total Return Worldwide

Notes: The table shows the twelve industry segments of the transactions we analyzed and the nine corresponding public benchmark indices for the performance comparison. The benchmark index information is provided by Thomson Datastream.

In this equation *CF*t is the cash flow generated in period *t*. In our case it is the difference of incomings and outgoings of payments between the general partner and the respective portfolio company. The problems associated with the IRR as a return measure have already been discussed elsewhere (see Phalippou 2008; Kaserer and Diller 2004). Due to these facts, we also employ other return measures. However, as far as the disentangling of the value levers is concerned, we conduct our analysis mainly on the basis of the IRR. This is justified by the fact that the IRR is strongly correlated with the other performance measures (Diller and Kaserer 2009), and thus it is unlikely that its use would create a significant bias.

As an alternative return measure we compute the ratio of distributed capital to paid-in capital (DPI). The DPI puts the sum of all incomings of payments in relation to all outgoings of payments. It is often simply called the multiple. At first the DPI equals zero, but it increases as more cash is being transferred to the investors. Once the sum of all incomings of payments exceeds the outgoings of all payments, the DPI tops 1. Mathematically the DPI can be expressed as the following equation:

$$DPI = \frac{\sum_{t=0}^{T} D_t}{\sum_{t=0}^{T} TD_t}$$

In this equation the capital paid into (respectively for) the portfolio company at time *t* is *TD*t and *D*t is the distribution paid by the portfolio company at time *t*.[12]

The general disadvantage of using such a performance measure is that the time value of money is not taken into consideration, and values not already realized are excluded. Since we analyze only fully realized transaction, the latter problem is not apparent for us.

In our approach we calculate the IRR and the DPI for each transaction and give a detailed overview of the absolute performance of private equity investments in financial institutions and bank holdings in a comprehensive cross-industry benchmarking.

We apply two methods to measure the relative performance and to answer the question of how private equity investments in each industry sector perform compared to public benchmark indices. By calculating the difference between a private equity investment's IRR and the IRR of a matched investment on the public stock market, we gather information on their relative performance. In other words, the excess IRR is the difference between an investment's IRR and the return of the public equity market over the lifetime of the investment.

Mathematically the excess IRR can be expressed as followed:

$$IRR_{ex} = IRR_{pe} - IRR_{em_i}$$

with:
IRR_{ex} = excess IRR of private equity investment
IRR_{pe} = IRR of private equity investment
IRR_{em_i} = IRR of public equity benchmark *i*

To accurately calculate the return of the matching public equity market *i*, one has to identify the exact lifetime of the underlying private equity investment and the respective total return index values of the benchmark index *i*. The resulting *IRR*em of the public benchmark *i* is subtracted from the *IRR*pe of the private equity investment, giving the excess internal rate of return *IRR*ex.

We additionally compute the public market equivalent (PME) to round up our analyses and to compensate for possible shortcomings of the excess IRR. Originally the PME was developed by Long and Nickels (1995); it matches every drawdown by an equal investment in a public market index, and every distribution by an equal sale of the respective public market index. This original version of the PME has a limitation: a private equity investment outperforming the public market index can produce a negative final value for the investment in the PME, in which case the divestment can only be done by running a short position. Taking this into account, we use the modified approach of Kaserer and Diller (2004), which circumvents the problem by reinvesting the cash flow from the portfolio company to the private equity firm into the public market. Mathematically the PME is expressed as the following equation:

$$PME = \frac{\sum_{t=1}^{T} CF_t \prod_{i=t+1}^{T} \left(1 + R_{Ii}\right)}{\prod_{i=t+1}^{T} \left(1 + R_{Ii}\right)}$$

In the PME equation, *CF*t is the positive cash flow of the private equity investment in period *t*, and *R*It is the net return of the matching public market benchmark

index in period *t*. Hence the PME is greater than 1 if the investors generate a higher terminal wealth by investing in the private equity segment instead of investing in the according public benchmark. The PME is now being applied by an increasing number of general and limited partners to validate the performance of private equity investments against their public counterparties.

We calculate the PME based on our nine previously identified industry benchmarks, taking industry characteristics and cycles into account to maximize the accuracy of our evaluation.

Value-Creation Framework

We previously discussed that only relatively little is known about how private equity firms create value. We developed a value creation framework to fill this research gap and to answer the question of how value is being created. The framework is based on the commonly used distinction between market timing, leverage, and operational improvement (see Acharya et al. 2009 for a related framework).

We approximate the overall value creation of every single private equity transaction by computing the IRR based on actual cash flows. We then calculate the value contribution of market timing and isolate this effect. Of course, the presumption behind this concept is that private equity firms have the skill set to understand, analyze, and optimize the value-creation factors in order to maximize the return of their investments.

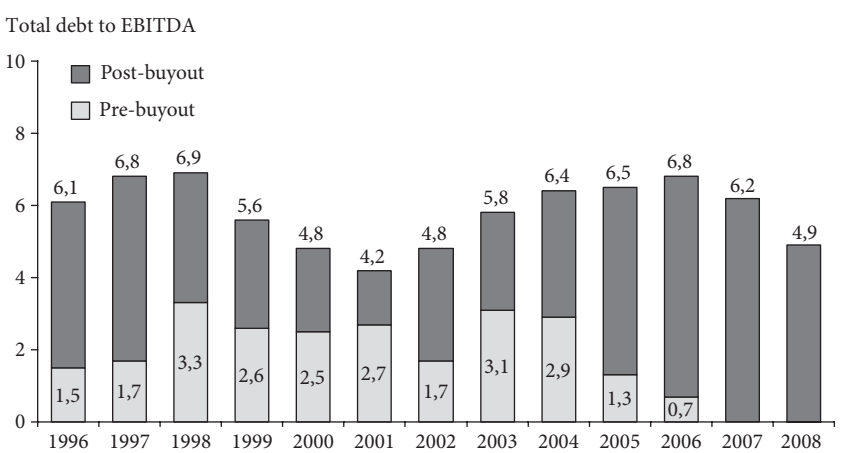

Figure 13.1 Leverage ratios of buyout transactions.
The figure shows the portfolio companies' pre- and postbuyout total debt-to-EBITDA ratio between 1996 and 2008. The illustration is based on research by Guo et al. (2010) and information provided by Standard & Poor's Leveraged Commentary and Data. For 2007 and 2008 no prebuyout total debt-to-EBITDA ratios are available.

Market timing embraces the ability of private equity firms to identify trends and industry-specific market valuation cycles and to capitalize on this knowledge. Although private equity firms do invest in illiquid assets, market timing supposedly influences the overall transaction performance to some degree and can be identified as a value-creation lever.

The use of financial leverage is another potential performance driver. In principle a private equity firm might finance a transaction using only the equity raised from limited partners; early-stage venture capital transactions are usually structured this way. However, the private equity buyouts that we are focusing on are structured differently. Buyouts are in general leveraged to a substantial degree, typically receiving debt through the syndicated loan market. This leverage effect can significantly influence the return on equity employed and can create value for the investing private equity firm. An overview of the leverage ratios typically employed in buyout transactions is given in Figure 13.1.

We do not have detailed leverage information for the buyout transactions analyzed in this paper. This is why we have to circumvent this problem by looking at the transactions related to financial institutions or bank holdings, where the flexibility in setting the leverage ratio is heavily restricted due to regulations.

The value-creation framework is completed by operational improvements. This value lever refers to the ability of private equity firms to set operational improvements in place, for instance by optimizing the portfolio companies' operations. Private equity firms are organized around industries and can access a pool of industry experts with operating background and special knowledge. Typical operational improvement measures include elements of margin improvement (such as cost cutting, optimized product prizing, and customer retention or selection) and elements of sales increases realized through investments in sales force or production capacity. Additionally strategic changes or repositioning, management changes, and utilization of acquisition opportunities are summarized under operational improvement measures. The combination of these factors determines the fundamental value creation of each transaction.

The basic question regarding market timing is whether private equity firms can generate a profit, ceteris paribus, simply by buying a portfolio company at market value and selling it at market value at a later stage. A profit is being generated, all other things being equal, if the market valuation level increases between investment and exit date.

To answer this question and to determine possible superior market-timing abilities of private equity firms, one has to compare the market valuation level at entry with the market valuation level at exit of each transaction. We extract the precise investment and exit dates for each transaction from our data set to execute this approach. After that we identify a ratio that accurately reflects the current market valuation level. In this regard we concentrate on the price-to-book ratio, especially because this is the most commonly used valuation ratio for financial institutions. The respective daily P/B time series are extracted from our nine industry-specific benchmarks provided by Thomson Datastream. Of course, we

could have also used other ratios as the EPS or price-earnings ratio. As there is no hard evidence indicating that any of these valuation multiples reflects the market valuation most accurately, we stick to the P/B-ratio here.

In a final step, we make the observed increase or decrease in market valuation comparable to our performance measures. We transform the difference between entry and exit valuation into an annualized measure which is similar to the IRR and can be linked to it. Mathematically the annualized change in the P/B market valuation can be expressed as the solution to the following equation:

$$-PB_{ei} + \frac{PB_{xi}}{\left(1 + IRR_{pb}\right)^{T}} = 0$$

In this equation *PB*ei is the price-to-book market valuation of the benchmark index *i* at the date of the private equity investment, and *PB*xi is the price-to-book market valuation at the exit date. *IRR*pb is the annualized change in the P/B valuation during the investment period *T*. This methodology can be explained by the following example: A private equity firm buys a bank holding company at a P/B market valuation level of 1.0 (*PB*ei) and sells it after a holding period of three years (*T*) at a P/B market valuation level of 1.331 (*PB*xi). All things being equal, the private equity firm can exit the investment with a 10 percent annualized return, that is, IRRpb = 10 percent, which in this case is entirely due to the private equity firm's market-timing abilities.

We apply this approach to the overall universe of available private equity transactions in our data set. This methodology allows us to accurately approximate the contribution of market timing to the overall value creation.

How can we disentangle the three value levers? To give a sense of the idea underlying this paper, we first start with a subset of transactions, where we assume that the leverage is almost constant between the investment and exit dates. This is assumed to be the case for financial institutions or bank holdings, as the leverage is almost always determined by regulation.

Assuming that there are no intermediate cash flows, the return of such a transaction is given as follows:

$$1 + IRR_{ov} = \sqrt[T]{\frac{PB_{xi}}{PB_{ei}}(1+\Delta)}$$

where T is the investment period, and Δ gives the operational improvement. Now the overall IRR generated in this transaction can be written as:

$$1 + IRR_{ov} = \left(1 + IRR_{pb}\right)(1+\Delta)^{1/T}$$

By linearizing this relationship, that is, by assuming $(1+\Delta)^{1/T}=1+\Delta/T$, and by defining Δ/T = IRRop to be the yearly increase in the fundamental economic variable determining the value of the firm, it follows that

$$IRR_{ov} = IRR_{pb} + IRR_{op} + IRR_{pb}IRR_{op} \approx IRR_{pb} + IRR_{op}$$

Of course, neglecting the interactive term in this equation is a simplification that holds true only as long as both IRRs are not too large. However, in this simplifying framework the overall transaction performance (*IRR*ov) can be split up arithmetically into the impact of operational improvement (*IRR*op) and the performance related to market timing (*IRR*pb). This will simplify the following analysis.

Empirical Results

Return Observations

We find that all private equity transactions (including early-stage venture investments) generate an average IRR in the range of 10 to 50 percent, while in the financial institution industry the average IRR is 36 percent and the median IRR is 27 percent gross of fees, as reported in Table 13.3. The median return of the 280 analyzed financial institution transactions exceeds all other industries; the average IRR ranks fourth and is outranked only by natural resources, telecom, and high-tech and semiconductor investments. Analysis shows that the outperformance is significant compared to software, IT Internet, and leisure transactions.

By analyzing buyout transactions only, we find the average IRR to be in the range of 8 to 70 percent. The respective 134 buyout transactions in the financial institutions industry generate an average IRR of 39 percent and a median IRR of 29 percent.

The third cluster of analyses focuses on the identified sixty-seven private equity transactions involving highly regulated bank holdings. The average IRR of 46 percent and the median IRR of 25 percent across all private equity transactions in this subsegment prove that high returns can be achieved in this capital-intense niche segment. This statement is backed by the facts that the median IRR surpasses all other industry sectors and the average IRR is ranked third. In line with the superordinated financial institution segment is the fact that the IRR comparison reveals significant superior returns of bank holdings compared to software, IT and Internet, and leisure private equity transactions.

Finally, we filter for buyouts of these bank holdings. Our analyses show a median IRR of 23 percent and an average IRR of 43 percent. The cross-industry benchmarking shows no significant underperformance compared to better-ranked industry segments.

These results are truly universal since returns (with one exception) do not differ across regions, as presented in Table 13.4. Moreover Table 13.5 shows that high IRRs are not generated by "bubble years." In fact, as is shown in Table 13.5, the subsample of those buyout transactions exited during the dot-com bubble years

Table 13.3 Sector Comparison of Internal Rate of Return

	Industry	FI	*BHC*	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
All private equity transactions	N	280	67	2.980	1.472	1.466	1.053	858	596	552	486	247	193	145
	Average	36,11%	*45,79%*	20,12%	27,46%	28,58%	52,68%	25,49%	26,91%	33,91%	49,80%	40,66%	35,28%	9,63%
	Median	26,80%	*24,87%*	−21,07%	21,87%	11,47%	0,09%	22,25%	18,33%	21,78%	14,21%	21,43%	16,67%	16,70%
	75th	55,95%	*57,26%*	33,44%	46,56%	46,57%	47,81%	44,37%	47,49%	55,06%	63,11%	48,02%	38,71%	38,13%
	25th	0,65%	*0,71%*	−100,00%	0,00%	−31,26%	−98,52%	0,00%	−2,43%	−3,05%	−57,98%	4,60%	0,00%	−2,53%
	Stdev	76,73%	*85,92%*	256,25%	96,69%	173,81%	334,65%	113,17%	123,95%	103,49%	253,47%	121,65%	153,42%	56,05%
Private equity buyouts	**N**	**134**	***35***	**523**	**750**	**315**	**183**	**461**	**334**	**222**	**113**	**75**	**93**	**93**
	Average	38,63%	*43,00%*	59,08%	32,79%	44,58%	40,89%	29,07%	40,58%	40,05%	62,06%	70,56%	49,52%	7,75%
	Median	28,65%	*23,09%*	18,05%	21,71%	27,89%	25,33%	26,54%	23,92%	34,11%	32,44%	27,89%	19,22%	12,08%
	75th	60,08%	69,57%	70,59%	56,56%	66,83%	68,61%	51,33%	55,37%	57,74%	81,06%	90,21%	46,32%	42,02%
	25th	0,65%	*0,52%*	−20,03%	−0,94%	0,00%	−5,12%	2,49%	0,00%	0,00%	0,00%	7,63%	0,76%	−15,10%
	Stdev	74,10%	*68,50%*	252,65%	108,35%	129,42%	137,30%	84,95%	140,37%	105,34%	176,44%	131,21%	188,18%	58,74%

Notes: The table shows, per industry segment, the number (N) of all private equity transactions as well as the number (N) of private equity buyout transactions only. Data for the average and the median internal rate of return (IRR) for each industry segment as well as figures for the 75th/25th percentile and the standard deviation are presented. The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.4 Regional Comparison of Internal Rate of Return

Region		Industry	FI	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
All private equity transactions		**N**	**280**	**2.980**	**1.472**	**1.466**	**1.053**	**858**	**596**	**552**	**486**	**247**	**193**	145
	US	Average	42,97%	26,33%	24,77%	31,23%	47,62%	21,36%	28,27%	40,89%	47,83%	34,46%	55,90%	−11,66%
		Median	32,46%	−19,20%	24,80%	10,61%	−1,89%	22,23%	17,98%	31,40%	15,13%	22,70%	24,54%	5,44%
	ROW	Average	27,61%	5,44%	29,32%	22,76%	64,75%	28,97%	26,32%	27,72%	55,61%	47,09%	23,63%	14,22%
		Median	18,94%	−28,79%	18,74%	13,62%	17,36%	22,28%	18,43%	17,21%	4,89%	19,56%	13,97%	17,27%
	t-Test	t Sig.	−1,686	−2,285	0,941	−0,958	−0,771	−0,299	0,181	1,481	−0,212	−0,808	1,156	−1,767
			0,093	0,022	0,347	0,338	0,441	0,765	0,857	0,139	0,832	0,420	0,251	0,087
Private equity buyouts		**N**	**134**	**523**	**750**	**315**	**183**	**461**	**334**	**222**	**113**	**75**	**93**	**93**
	US	Average	44,36%	63,94%	25,04%	36,27%	40,85%	24,39%	49,67%	43,56%	95,97%	55,16%	149,64%	−30,35%
		Median	43,77%	24,14%	25,19%	18,98%	23,43%	28,46%	18,76%	36,33%	63,25%	22,94%	23,06%	4,01%
	ROW	Average	33,71%	52,79%	34,92%	51,75%	41,45%	30,83%	38,24%	37,06%	56,07%	74,16%	27,73%	12,21%
		Median	23,58%	12,52%	20,93%	31,57%	25,65%	26,25%	24,30%	27,76%	21,85%	28,96%	18,57%	12,08%
	t-Test	t Sig.	−0,812	−0,496	1,134	1,197	−0,029	−0,759	0,509	0,455	1,142	−0,709	1,205	−2,032
			0,418	0,620	0,258	0,232	0,977	0,449	0,612	0,649	0,256	0,485	0,246	0,065

Notes: The table shows, per industry segment, the number (N) of all private equity transactions as well as the number (N) of private equity buyout transactions only. Data for the average and the median internal rate of return (IRR) for each industry segment are separated into U.S. and rest of the world (ROW) transactions. Returns of both regions are compared by two-tailed t-tests ($\alpha = 5\%$).
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.5 Influence of Bubble Years on the Internal Rate of Return

Scenarios	Exit during buyout bubble (2005–2007)	No exit during buyout bubble (2005–2007)	Exit during dot-com bubble (1998–2001)	No exit during dot-com bubble (1998–2001)
N	649	2647	1158	2138
Average	42,87%	40,74%	34,34%	44,86%
Median	19,38%	25,49%	24,12%	24,57%
75th	53,49%	62,21%	58,98%	60,44%
25th	0,00%	-1,25%	-4,43%	0,00%
Stdev	178,75%	140,21%	118,86%	162,30%
t-Test				
t	0,326		-1,941	
Sig.	0,744		0,052	

Notes: The table shows the number (N) as well as the average and the median internal rate of return (IRR) of buyout transactions that were and were not exited during bubble years. The first two columns refer to the buyout bubble of 2005–2007; the last two columns refer to the dot-com (or Internet) bubble of 1998–2001. Figures for the 75th/25th percentile and the standard deviation of the IRR are presented as well. Returns are compared by two-tailed t-tests ($\alpha = 5\%$).

(1998–2001) displays lower IRRs than the remaining buyout transactions in our sample. The difference is weakly significant. As far as the bubble years 2005–2007 are concerned, a significant difference can be detected.

We now check the IRR figures with the DPI ratio to level the limitations of a purely value-weighted return measure (Table 13.6). Analogously, we first look at the overall universe of 10,328 private equity transactions to calculate the DPI ratios across all industries. Results are reported in Table 13.6. Average multiplies are in the range of 1.8 to 4.2. The highest multiple is observed for financial institutions that return a median DPI of 1.9 and an average DPI multiple of 4.1. The latter is only very slightly exceeded by the DPI ratio of telecom investments, but the difference is not significant. On the other hand, we find that the observed outperformance of financial institutions is significant compared to seven other industry segments. Once more returns in the financial institution industry are less dependent on outliers and are more homogeneous.

The next cluster, which comprises buyout transactions only, shows even higher average DPI ratios, in the range of 1.8 to 7.0. The average ratio of financial institutions is 4.4 and the median ratio is 2.4, making financial institutions the most profitable industry based on median DPI figures and the second most profitable industry based on average figures. Significant is the difference compared to buyouts in the basic material and leisure industry.

The findings in the research cluster dealing with all private equity investments in bank holding companies complete the picture. The respective DPI ratio is 4.2 on

average (ranked number one), and the median DPI is ranked number five, returning 1.7 times the money invested. These results are in line with our previous results and prove that bank holdings are an attractive subsegment for private equity firms. Our cross-industry benchmarking underlines this fact since no other (traditional) private equity segment shows significant higher multiples.

Finally, we filter for buyout transactions of bank portfolio companies, which are the core of our value-creation decomposition. We find an average DPI ratio of 7.0 and a median value of 2.2. Our cross-industry benchmarking shows that the average multiple generated in bank holding buyout transactions exceeds all other industries, and the median multiple is outperformed by only three industries. To give a complete picture, we would like to mention that the 75th percentile DPI ratio equals 3.6 and the 25th percentile DPI ratio equals 1.0. Statistically the calculated multiples are in line with the other industry segments.

To foster our findings on the performance of private equity investments in each industry segment, we broaden our research approach and also consider relative return measures. We analyze the performance of private equity compared to public benchmark indices and perform cross-industry performance comparisons. The specific focus is again on financial institutions.

To begin with, we compare the computed IRR of all private equity investments in financial institutions with the return of the respective public equity market. In this regard we employ the matching industry-specific benchmark and find that the average excess IRR that private equity firms generate by investing in financial institutions equals 27 percent, as reported in Table 13.7. The excess IRR is ranked third in our cross-industry benchmarking, and the results are significant compared to software, IT and Internet, and leisure transactions. The median excess IRR equals 18 percent and tops all other sectors. The excess IRR over all industries is in the range of 3 to 48 percent.

Focusing on buyout transactions only, we find that the median excess IRR of financial institutions of 19 percent is again among the top performing sectors. In contrast to this and in contrast to our previous findings, we compute only a ninth ranked average excess return of 29 percent. However, tests show that this underperformance, compared to the eight other industries, is not significant.

The cluster of bank holdings shows results that are consistent with earlier findings. Bank holdings generate a median excess IRR of 16 percent and an average excess IRR of 35 percent. Applying these figures to our industry benchmarking, we find that the median in Figure 13.1 is ranked number one, while the average excess IRR is ranked third.

The core analyses of buyouts of bank holdings reveal a marginal performance slip to an average excess IRR of 33 percent and a median excess IRR of 14 percent. These returns are midway of all industry sectors, with no significant underperformance compared to better ranked industries. On the other hand, the outperformance of this niche segment is significant compared to at least one other industry segment. The sum of these results proves an outperformance of private equity–backed bank holdings compared to public financial services benchmark indices on a broad basis.

Table 13.6 Sector Comparison of Distributed to Paid Capital Ratio

	Industry	FI	*BHC*	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
All private equity transactions	N	280	67	2.980	1.472	1.466	1.053	858	596	552	486	247	193	145
	Average	4,10	4,22	3,04	3,09	2,91	4,12	2,91	2,90	2,91	3,97	2,59	2,46	1,83
	Median	1,92	1,68	0,41	1,77	1,47	1,06	1,81	1,65	1,82	1,57	1,85	1,52	1,43
	75th	3,56	3,15	2,42	2,88	3,28	3,27	3,00	3,04	3,20	3,44	2,91	2,95	2,20
	25th	1,03	1,03	0,00	0,94	0,24	0,00	1,01	0,38	0,80	0,10	1,11	0,84	0,44
	Stdev	8,73	14,23	10,78	8,83	6,67	12,83	7,24	6,39	5,03	11,65	2,70	3,84	2,26
Private equity buyouts	N	134	35	523	750	315	183	461	334	222	113	75	93	93
	Average	4,39	7,00	3,57	3,37	3,14	3,43	3,06	3,06	3,03	4,46	3,03	2,38	1,82
	Median	2,43	2,21	1,87	1,95	2,09	2,27	2,19	1,98	2,30	2,33	2,15	1,75	1,58
	75th	4,19	3,62	3,99	3,67	4,01	3,82	3,44	3,62	3,46	3,61	4,26	3,08	2,33
	25th	1,03	1,03	0,30	0,61	1,11	0,42	1,16	0,56	1,00	0,85	1,28	1,09	0,24
	Stdev	10,84	*21,77*	5,64	7,88	3,73	6,50	6,43	4,28	3,92	15,56	2,81	2,53	2,03

Notes: The table shows, per industry segment, the number (N) of all private equity transactions as well as the number (N) of private equity buyout transactions only. Data for the average and the median distributed to paid capital (DPI) ratio for each industry segment as well as figures for the 75th/25th percentile and the standard deviation are presented.
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.7 Sector Comparison of Excess Internal Rate of Return

	Industry	FI	*BHC*	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
All private equity transactions	N	280	*67*	2.980	1.472	1.466	1.053	858	596	552	486	247	193	145
	Average	26,88%	*34,95%*	0,39%	16,35%	17,15%	48,18%	17,98%	19,89%	24,97%	37,05%	25,57%	24,57%	2,48%
	Median	18,25%	*15,74%*	−26,45%	10,89%	0,05%	−5,49%	15,35%	11,74%	12,24%	3,04%	9,64%	8,60%	9,34%
	75th	42,80%	*43,33%*	6,65%	31,15%	30,55%	30,53%	32,29%	35,89%	41,14%	34,98%	29,52%	28,40%	24,95%
	25th	−4,17%	*−4,64%*	−84,71%	−6,04%	−36,62%	−89,33%	−2,43%	−4,74%	−7,57%	−56,38%	−4,07%	−6,09%	−4,39%
	Stdev	64,98%	*74,42%*	−127,46%	85,92%	156,87%	309,65%	100,37%	112,87%	90,25%	220,28%	111,07%	141,84%	45,24%
Private equity buyouts	N	134	*35*	523	750	315	183	461	334	222	113	75	93	93
	Average	29,10%	*32,70%*	50,47%	21,62%	32,61%	30,59%	21,60%	33,83%	31,72%	40,84%	52,87%	38,49%	0,37%
	Median	19,13%	*14,11%*	7,34%	10,66%	16,36%	17,15%	19,63%	17,18%	25,87%	13,18%	13,80%	10,95%	4,06%
	75th	46,31%	55,54%	46,05%	41,15%	51,03%	51,11%	40,16%	44,70%	44,76%	46,04%	63,48%	36,28%	28,82%
	25th	−5,65%	*−5,78%*	−12,32%	−7,59%	−7,66%	−4,65%	−0,05%	−2,88%	−3,37%	−5,64%	−3,08%	−5,44%	−18,82%
	Stdev	63,09%	*58,73%*	224,78%	98,83%	122,64%	112,38%	69,94%	130,52%	91,60%	148,99%	120,62%	177,65%	49,85%

Notes: The table shows, per industry segment, the number (N) of all private equity transactions as well as the number (N) of private equity buyout transactions only. Data for the average and the median excess internal rate of return (E IRR) for each industry segment as well as figures for the 75th/25th percentile and the standard deviation are presented. The excess IRR figures are computed compared to nine industry specific benchmark indices provided by Datastream.

The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

We finally test these results by mimicking the cash flows of the private equity investments and applying the public market equivalent (Table 13.8). Our first analysis regarding PME, which comprises all private equity transactions, shows an average PME of 3.0 and a median PME of 1.6 for financial institutions. Over all industries the average PME is in the range of 1.5 to 3.6. Both ratios of financial institutions are ranked number one in our cross-industry benchmarking, and significantly higher PME values are proven compared to seven benchmarking segments.

Analyses of buyout transactions provide slightly higher relative returns. These buyouts of financial institutions generate an average PME of 3.2 and a median PME of 1.9. Over all industries the average PME is in the range of 1.4 to 5. These results are in line with the preceding findings and confirm the strong relative performance of financial institutions compared to other industries and compared to public benchmarks. Significance is proven compared to the PME figures of leisure buyouts.

All bank holding transactions return an average PME of 3.6 and a median PME of 1.6. They not only significantly outperform their mimicked public benchmark, but they also surpass the PME of all other industry sectors. These results confirm prior findings and prove significantly higher excess returns.[13] We find the highest average PME figure, of all analyses, by filtering for buyouts of bank holdings but could not prove significance compared to other industries in our cross-industry benchmarking. The average PME of 5.0 and the median PME of 1.5 indicate that private equity–backed bank holdings outperform public financial services indices on a broad basis.

Decomposing Value Creation

In the course of our value-creation decomposition, we first present our empirical findings on the impact of market timing on the overall value creation through private equity. We calculate the value contribution of market timing and later put these figures in relation to the overall value creation, which is represented by the IRR.

In the financial institution buyout category, market timing accounts for annualized returns of 2.3 percent on average and the median *IRR*pb equals 2.9 percent, as can be seen in Table 13.9. This means private equity firms generate an average transaction IRR of 2.3 percent and a median transaction IRR of 2.9 percent by accurately timing the market and all other things being equal. Looking at the capital-intensive subsegment of bank holdings, we find a slightly higher contribution of market timing to the overall value creation. The average *IRR*pb is 4.2 percent and the median *IRR*pb is 3.0 percent.

We also find evidence that private equity firms in general have excellent market-timing abilities. The average market valuation increases for all twelve industry sectors between the investment and exit dates.[14]

Table 13.8 Sector Comparison of Public Market Equivalent

	Industry	FI	*BHC*	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
All private equity transactions	N	280	*67*	2.980	1.472	1.466	1.053	858	596	552	486	247	193	145
	Average	2,98	*3,58*	1,90	1,97	1,91	2,88	2,14	2,20	2,02	2,56	1,72	1,88	1,50
	Median	1,64	*1,62*	0,39	1,28	1,00	0,79	1,49	1,36	1,41	1,00	1,21	1,19	1,17
	75th	2,71	*2,57*	1,84	2,10	2,25	2,47	2,43	2,55	2,29	2,26	2,10	2,19	1,80
	25th	0,75	*0,75*	0,00	0,58	0,15	0,00	0,82	0,32	0,55	0,07	0,71	0,64	0,30
	Stdev	7,00	*12,52*	6,27	3,91	3,47	8,24	3,98	4,81	3,12	6,94	1,92	2,82	1,92
Private equity buyouts	N	134	*35*	523	750	315	183	461	334	222	113	75	93	93
	Average	3,23	*5,00*	2,32	2,12	2,27	2,50	2,19	2,31	2,21	2,70	1,94	1,84	1,43
	Median	1,85	*1,51*	1,25	1,38	1,50	1,54	1,71	1,59	1,73	1,42	1,41	1,32	1,20
	75th	3,14	*2,59*	2,93	2,58	2,94	2,95	2,79	3,10	2,50	2,35	2,51	2,28	1,82
	25th	0,74	*0,74*	0,24	0,40	0,63	0,30	0,91	0,38	0,80	0,53	0,74	0,80	0,23
	Stdev	9,12	*17,45*	3,84	3,43	2,83	4,89	2,70	2,82	2,86	8,52	1,86	2,08	1,47

Notes: The table shows, per industry segment, the number (N) of all private equity transactions as well as the number (N) of private equity buyout transactions only. Data for the average and the median public market equivalent (PME) for each industry segment as well as figures for the 75th/25th percentile and the standard deviation are presented. The PME figures are computed compared to nine industry specific benchmark indices provided by Datastream.
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.9 Sector Comparison of Internal Rate of Return of Market Timing

	Industry	FI	*BHC*	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
Private equity buyouts	N	134	*35*	523	750	315	183	461	334	222	113	75	93	93
	Average	2,34%	*4,18%*	0,95%	1,61%	2,30%	7,69%	1,25%	1,80%	0,48%	10,01%	3,33%	2,57%	0,35%
	Median	2,90%	*2,96%*	2,39%	1,64%	1,05%	−2,32%	0,51%	1,28%	0,41%	8,44%	3,03%	1,09%	−1,03%
	75th	6,20%	*6,44%*	11,97%	4,72%	8,60%	7,75%	5,37%	6,42%	5,58%	24,08%	8,43%	6,04%	5,65%
	25th	−2,13%	*−1,56%*	−10,73%	−1,50%	−4,76%	−8,07%	−3,24%	−3,31%	−4,24%	−1,49%	−0,78%	−1,79%	−7,50%
	Stdev	10,26%	*7,31%*	20,14%	6,40%	10,49%	109,42%	14,97%	9,23%	13,35%	17,65%	7,19%	9,10%	12,04%

Notes: The table shows the number (N) of private equity buyout transactions per industry segment and the average and the median internal rate of return generated through pure market timing (IRR*pb*). The IRR*pb* is the annualized change in the price-to-book ratio between buyout entry and buyout exit. Figures for the 75th/25th percentile and the standard deviation are presented.
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.10 Regression Analyses of the Influence of Market Timing

Industry	FI	*BHC*	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
N	134	35	523	750	315	183	461	334	222	113	75	93	93
R sq.	0,084	0,209	0,007	0,000	0,009	0,074	0,000	0,018	0,128	0,042	0,142	0,101	0,016
R sq. adj.	0,077	0,179	0,005	−0,001	0,005	0,069	−0,002	0,015	0,124	0,033	0,130	0,091	0,005
C	33,727	24,530	58,088	32,416	47,216	38,260	28,919	36,894	38,685	41,737	47,668	32,583	7,534
C (std. error)	6,307	13,686	11,033	4,082	7,446	9,817	3,974	7,765	6,620	18,754	15,595	19,337	6,080
Beta timing	2,098	3,992	1,043	0,229	−1,146	0,342	0,118	2,058	2,827	2,050	6,873	6,584	0,609
Beta (std. error)	0,601	1,523	0,548	0,619	0,694	0,090	0,265	0,828	0,497	0,932	1,980	2,055	0,507
C Sig.	0,000	0,085	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,028	0,003	0,095	0,218
Beta Sig.	0,001	0,014	0,048	0,711	0,100	0,000	0,657	0,013	0,000	0,030	0,001	0,002	0,233

Notes: The table shows the results of the linear regression analysis of the influence of market-timing-induced returns (IRR*pb*) (independent variable) on the overall transaction IRR (dependent variable) of private equity buyout transactions per industry segment. The constant is C; the slope is Beta timing. Amendatory results are tested for significance. The number of transactions per industry (N) is also reported.
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Regression analyses presented in Table 13.10 back these findings with positive and significant market-timing regression coefficients for eight of the twelve industry segments. Moreover the size of the constant C gives an indication that the largest part of the returns does not stem from market-timing abilities.

The previous analyses pinpoint three facts regarding market-timing-induced returns. First, private equity investments in financial institutions as well as in bank holding companies generate positive returns through actively timing the market. Second, this pattern is also observed in most other industry segments, proving that private equity firms in general can capitalize on market-timing abilities. Third, market-timing-induced returns in the financial institution and bank holding segment are in line with other industry segments that are more penetrated by private equity firms.

We now present our findings regarding the relative contribution of market timing to the overall value creation and put the absolute return figures in relation to the transaction performance of each industry sector. Results are presented in Tables 13.11 and 13.12. We find that the median contribution of market timing to the overall value creation within financial institutions equals 10 percent. The average contribution reaches 6 percent. In our cross-industry benchmarking we find average ratios ranging from 1 to 19 percent and median ratios ranging from –9 to 26 percent. A closer look at buyouts of bank holding portfolio companies reveals that average and median figures are comparable in magnitude, but are slightly higher. The average contribution of market timing to the overall performance of bank holding buyouts equals 10 percent, and the median contribution equals 13 percent.

Regression analyses of the relative contribution of market-timing-induced returns to the overall value creation prove that the magnitude of market timing effects for financial institutions and bank holding companies is in line with the other industries.

We conclude from these results that for private equity investments in financial institutions roughly 10 percent of the overall value is been created through market-timing abilities, while 90 percent depends on other value levers like leverage or operational improvement. It is interesting to note that these figures are pretty close to those of bank holdings, with 13 percent of the value creation depending on pure market-timing abilities and therefore 87 percent on operational improvement. For this group, leverage effects should be negligible; this result is in line with the presumption that private equity firms add fundamental value to their companies.

Of course, there is no direct way to extend this result for financial institutions to all other industry segments. There is just an indirect way to do so: if leverage increase is missing as a value driver in financial institutions transactions, this should have an impact on the relative transactions returns; that is, we would expect transaction returns to be greater in those industries where leverage can be used as a performance driver. As a disclaimer it should be said that this is not an equilibrium argument, so we would not make any claims on how relative transactions should look in capital market equilibrium. The only point that will be made in the following is just to analyze whether there are any significant return differences in the

Table 13.11 Relative Contribution of Market Timing to Overall Value Creation

	Industry	FI	*BHC*	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
Private equity buyouts	N	134	*35*	523	750	315	183	461	334	222	113	75	93	93
Average contribution to IRR		6,05%	*9,72%*	1,62%	4,91%	5,17%	18,82%	4,31%	4,43%	1,21%	16,12%	4,72%	5,20%	4,53%
Median contribution to IRR		10,12%	*12,82%*	13,26%	7,53%	3,75%	−9,14%	1,92%	5,37%	1,19%	26,01%	10,85%	5,67%	−8,51%

Notes: The table shows the number (N) of private equity buyout transactions per industry segment and the average and the median contribution of market-timing-induced returns (IRR*pb*) to the overall value creation (IRR).
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.12 Multiregression Analyses of Market Timing

$$IRR = C + \beta_{Basis} IRR_{pb} + \beta_{SII} D_{SII} + \beta_{IM} D_{IM} + \beta_{HC} D_{HC} + \beta_{TC} D_{TC} + \beta_{CI} D_{CI} + \beta_{RT} D_{RT} + \beta_{ME} D_{ME} + \beta_{HS} D_{HS} + \beta_{NR} D_{NR} + \beta_{BM} D_{BM} + \beta_{LE} D_{LE}$$

Industry	Constant	FS Basis	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
N	–	134	523	750	315	183	461	334	222	113	75	93	93
Beta timing	37,509	0,481	21,114	−5,498	5,959	−0,322	−9,046	2,210	2,310	19,779	31,446	10,776	−29,930
Beta (std. error)	12,757	0,090	14,297	13,849	15,229	16,795	14,409	15,099	16,154	18,871	21,294	19,929	19,929
Sig. Beta	0,003	0,000	0,140	0,691	0,696	0,985	0,533	0,884	0,886	0,295	0,140	0,589	0,133
Industry	Constant	BHC Basis	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
N	–	35	523	750	315	183	461	334	222	113	75	93	93
Beta timing	40,800	0,475	17,829	−8,779	2,683	−3,565	−12,329	−1,069	−0,978	16,551	28,176	7,501	−33,218
Beta (std. error)	28,254	0,091	28,999	28,774	29,480	30,336	29,097	29,412	29,981	31,561	33,107	32,224	32,226
Sig. Beta	0,149	0,000	0,539	0,760	0,927	0,906	0,672	0,971	0,974	0,600	0,395	0,816	0,303

Notes: The table presents the results of the multiregression analyses of the influence of market-timing-induced returns (IRR*pb*) on the overall value creation (IRR) of private equity buyout transactions. Financial institutions (upper half of table) and bank holdings (lower half of table) are the base industry (βBasis). The difference in the influence of market timing between the base industry and the other industries (Di) is presented by the slope difference (βi). All results are tested for significance.

The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

different industries. If this is not the case, this may be an indication that leverage is not an important return driver in other industries as well.

As a first indication we analyze whether market-timing-induced returns of private equity investments in financial institutions and bank holdings are different from other industry sectors in our benchmarking. Results are presented in Table 13.13. The highest annualized increase is observed in the high-tech and semiconductor industry, with buyout transactions generating 10 percent *IRR*pb on average and a median *IRR*pb of 8 percent. Tests show that these absolute market-timing-induced returns are significantly higher than the values calculated for financial institutions and bank holdings. For the other industry segments no significant difference could be proven.

Similar results are obtained when comparing the IRR, the DPI, the excess IRR, and the PME among the different industries. In almost all cases we do not find any significant difference, indicating that the overall value creation is similar in the different industries. Results are reported in Tables 13.14 to 13.17.

Conclusion and Outlook

The objective of this chapter was to get a better understanding of value creation and performance of private equity investments and to quantify the different value levers. To this purpose we analyzed a data set provided by CEPRES including today more than 29,000 private equity transactions. As of the date of writing this analysis, among them were also nearly 3,500 pure buyout transactions across all industries.

We proceeded in two steps. First we gave an overview of the overall transactions returns. The average gross of fees IRR (multiple) of all private equity transactions is in the range of 10 to 50 percent (1.8 to 4.2), while for pure buyout transactions it is in the range of 8 to 70 percent (1.8 to 7.0). The average excess IRR (PME) is in the range of 2 to 48 percent (1.5 to 3.6).

In a second step we investigated the value drivers in private equity transactions. Usually market timing, leverage, and operational improvement are defined as the major value drivers. Unfortunately, due to missing data, is very difficult to decompose observed returns into these three components. In this paper we try to do so by investigating transaction returns in the financial institutions industry more deeply. To that purpose we use the assumption that because of strict regulations, leverage cannot be significantly managed in these companies. Hence value creation must come either from market timing or from operational improvement.

By decomposing overall transaction returns into these two components we show that a median of 87 percent of total transaction returns in financial institutions is driven by operational improvement, making it by far the most important

Table 13.13 Statistical Significance of Internal Rate of Return of Market Timing

			Industry		SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
Private equity buyouts			N		523	750	315	183	461	334	222	113	75	93	93
	Variance equal	Levene	F	FI	59,459	7,919	11,711	2,548	0,609	0,311	3,663	48,744	0,019	0,320	4,620
				BHC	*14,106*	*1,920*	*4,608*	*0,546*	*0,198*	*0,204*	*1,197*	*17,745*	*0,001*	*0,328*	*2,343*
			Sig.	FI	0,000	0,005	0,001	0,111	0,436	0,577	0,056	0,000	0,891	0,572	0,033
				BHC	*0,000*	*0,166*	*0,033*	*0,461*	*0,657*	*0,652*	*0,275*	*0,000*	*0,973*	*0,568*	*0,128*
		t-Test	t	FI	0,772	1,094	0,033	−0,565	0,787	0,562	1,381	−4,209	−0,741	−0,177	1,336
				BHC	*0,962*	*2,429*	*1,143*	*−0,148*	*1,181*	*1,579*	*1,605*	*−1,550*	*0,794*	*1,078*	*1,766*
			Sig.	FI	0,440	0,274	0,974	0,573	0,431	0,574	0,168	0,000	0,459	0,860	0,183
				BHC	*0,337*	*0,015*	*0,254*	*0,882*	*0,238*	*0,115*	*0,110*	*0,123*	*0,429*	*0,283*	*0,080*
	Variance not equal	t-Test	t	FI	1,110	0,796	0,033	−0,658	0,963	0,537	1,472	−4,036	−0,817	−0,181	1,298
				BHC	*2,131*	*2,010*	*1,455*	*−0,373*	*2,059*	*1,810*	*2,391*	*−2,381*	*0,762*	*1,168*	*2,206*
			Sig.	FI	0,268	0,427	0,973	0,511	0,336	0,592	0,142	0,000	0,415	0,857	0,196
				BHC	*0,038*	*0,054*	*0,154*	*0,709*	*0,046*	*0,079*	*0,021*	*0,019*	*0,450*	*0,248*	*0,031*

Notes: The table shows the results of the two-tailed t-test (α = 5%) of the comparison of the internal rate of return of market-timing-induced returns (IRR*pb*) between financial institutions (FI) and bank holding companies (BHC) and the eleven other industry segments. The number of analyzed transactions (N) is reported.

The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.14 Statistical Significance of Internal Rate of Return

			Industry		SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
All private equity transactions			N		2.980	1.472	1.466	1.053	858	596	552	486	247	193	145
	Variance equal	Levene	F	FI	19,287	0,001	7,122	22,868	0,339	1,182	3,222	18,825	3,316	1,338	2,654
				BHC	4,051	0,080	1,298	4,973	0,277	0,105	0,417	4,031	0,550	0,184	2,528
			Sig.	FI	0,000	0,979	0,008	0,000	0,561	0,277	0,073	0,000	0,069	0,248	0,104
				BHC	0,044	0,778	0,255	0,026	0,599	0,745	0,519	0,450	0,459	0,668	0,113
		t-Test	t	FI	1,040	1,416	0,712	−0,822	1,464	1,144	0,315	−0,880	−0,519	0,780	3,678
				BHC	0,838	1,518	0,840	−0,142	1,484	1,259	0,964	−0,095	0,381	0,574	3,708
			Sig.	FI	0,298	0,157	0,477	0,411	0,143	0,253	0,753	0,379	0,604	0,938	0,000
				BHC	0,402	0,113	0,401	0,887	0,138	0,208	0,336	0,924	0,703	0,567	0,000
	Variance not equal	t-Test	t	FI	2,438	1,655	1,167	−1,468	1,772	1,346	0,347	−1,105	−0,505	0,070	4,054
				BHC	2,265	1,744	1,554	−0,394	1,857	1,666	1,104	−0,191	0,462	0,745	3,160
			Sig.	FI	0,015	0,099	0,243	0,142	0,077	0,179	0,729	0,269	0,614	0,945	0,000
				BHC	0,026	0,086	0,124	0,694	0,067	0,099	0,272	0,849	0,645	0,457	0,002

(*continued*)

Table 13.14 (continued)

				Industry	SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
Private equity buyouts			N		523	750	315	183	461	334	222	113	75	93	93
	Variance equal	Levene	F	FI	7,658	0,980	1,558	5,269	0,127	1,390	0,902	9,533	15,247	3,189	0,780
				BHC	1,533	0,143	0,275	1,104	0,081	0,243	0,149	2,094	4,336	0,668	0,714
			Sig.	FI	0,006	0,323	0,213	0,022	0,722	0,239	0,343	0,002	0,000	0,075	0,378
				BHC	0,216	0,705	0,600	0,295	0,776	0,622	0,700	0,150	0,040	0,415	0,400
		t-Test	t	FI	−0,926	0,600	−0,498	−0,173	1,180	−0,152	−0,137	−1,398	−2,250	−0,606	3,354
				BHC	−0,336	0,495	−0,064	0,080	0,851	0,090	0,144	−0,560	−1,057	−0,180	2,676
			Sig.	FI	0,355	0,549	0,619	0,863	0,239	0,879	0,891	0,163	0,026	0,545	0,001
				BHC	0,737	0,621	0,949	0,937	0,395	0,928	0,886	0,576	0,293	0,858	0,008
	Variance not equal	t-Test	t	FI	−1,601	0,777	−0,612	−0,188	1,272	−0,195	−0,149	−1,317	−1,941	−0,530	3,495
				BHC	−0,945	0,754	−0,106	0,128	1,029	0,160	0,200	−0,906	−1,383	−0,279	2,464
			Sig.	FI	0,110	0,438	0,541	0,851	0,205	0,846	0,882	0,190	0,055	0,597	0,001
				BHC	0,348	0,456	0,916	0,898	0,311	0,873	0,843	0,367	0,170	0,781	0,018

Notes: The table shows the results of the two-tailed t-test (α = 5%) of the internal rate of return (IRR) comparison between financial institutions (FI) and bank holding companies (BHC) and the eleven other industry segments. The number (N) of transactions is also reported.
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.15 Statistical Significance of Distributed to Paid Capital Ratio

			Industry		SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
All private equity transactions			N		2.980	1.472	1.466	1.053	858	596	552	486	247	193	145
	Variance equal	Levene	F	FI	0,007	4,813	7,469	2,389	10,525	7,734	12,627	0,332	17,285	10,963	15,656
				BHC	0,147	2,172	3,560	0,221	4,335	3,654	5,895	0,000	7,956	5,065	6,819
			Sig.	FI	0,933	0,028	0,006	0,122	0,001	0,006	0,000	0,565	0,000	0,001	0,000
				BHC	0,702	0,141	0,059	0,639	0,038	0,560	0,015	0,994	0,005	0,025	0,010
		t-Test	t	FI	1,593	1,748	2,577	−0,037	2,257	2,283	2,484	0,161	2,610	2,443	3,072
				BHC	0,937	1,057	1,544	0,115	1,373	1,432	1,610	0,219	1,775	1,626	2,024
			Sig.	FI	0,111	0,081	0,010	0,971	0,024	0,023	0,013	0,872	0,009	0,015	0,002
				BHC	0,349	0,291	0,123	0,909	0,170	0,153	0,108	0,826	0,077	0,105	0,044
	Variance not equal	t-Test	t	FI	1,896	1,762	2,152	−0,045	2,053	2,046	2,105	0,173	2,749	2,769	4,088
				BHC	0,709	0,678	0,780	0,103	0,777	0,781	0,780	0,186	0,961	1,023	1,380
			Sig.	FI	0,059	0,079	0,032	0,964	0,041	0,041	0,036	0,862	0,006	0,006	0,000
				BHC	0,481	0,500	0,438	0,918	0,440	0,438	0,438	0,853	0,340	0,310	0,172

(*continued*)

Table 13.15 (continued)

			Industry		SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
Private equity buyouts			N		523	750	315	183	461	334	222	113	75	93	93
	Variance equal	Levene	F	FI	1,279	2,143	7,072	1,523	6,409	6,073	6,200	0,050	2,704	5,068	6,468
				BHC	17,745	12,527	24,283	9,232	18,079	22,475	18,433	1,454	7,567	10,703	11,787
			Sig.	FI	0,259	0,144	0,008	0,218	0,012	0,014	0,013	0,823	0,102	0,025	0,012
				BHC	0,000	0,000	0,000	0,003	0,000	0,000	0,000	0,230	0,007	0,001	0,001
		t-Test	t	FI	1,210	1,298	1,811	0,982	1,777	1,904	1,689	−0,044	1,063	1,756	2,257
				BHC	2,416	2,156	2,756	1,776	2,505	2,762	2,444	0,708	1,555	2,021	2,282
			Sig.	FI	0,227	0,195	0,071	0,327	0,760	0,058	0,092	0,965	0,289	0,080	0,025
				BHC	0,016	0,031	0,006	0,077	0,013	0,006	0,015	0,480	0,123	0,046	0,024
	Variance not equal	t-Test	t	FI	0,848	1,043	1,302	0,913	1,355	1,377	1,393	−0,043	1,369	2,069	2,677
				BHC	0,832	0,880	0,936	0,861	0,955	0,955	0,961	0,580	0,960	1,121	1,257
			Sig.	FI	0,398	0,298	0,195	0,363	0,177	0,170	0,166	0,966	0,173	0,040	0,008
				BHC	0,413	0,387	0,357	0,397	0,348	0,348	0,345	0,566	0,345	0,272	0,220

Notes: The table shows the results of the two-tailed t-test ($\alpha = 5\%$) of the distributed to paid capital (DPI) ratio comparison between financial institutions (FI) and bank holding companies (BHC) and the eleven other industry segments. The number (N) of transactions is also reported.
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.16 Statistical Significance of Excess Internal Rate of Return

			Industry		SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
All private equity transactions			N		2.980	1.472	1.466	1.053	858	596	552	486	247	193	145
	Variance equal	Levene	F	FI	6,043	0,106	8,329	21,548	0,107	1,513	3,194	17,533	3,876	1,753	2,046
				BHC	1,227	0,062	1,401	4,533	0,240	0,093	0,271	3,571	0,520	0,197	2,519
			Sig.	FI	0,014	0,744	0,004	0,000	0,744	0,219	0,074	0,000	0,050	0,186	0,153
				BHC	0,268	0,804	0,237	0,033	0,624	0,760	0,603	0,059	0,471	0,658	0,114
		t-Test	t	FI	0,959	1,729	0,905	−1,072	1,230	0,882	0,280	−0,656	0,153	0,220	3,490
				BHC	0,613	1,572	0,837	−0,309	1,221	1,001	0,807	−0,048	0,627	0,552	3,324
			Sig.	FI	0,338	0,084	0,366	0,284	0,219	0,378	0,780	0,512	0,879	0,826	0,001
				BHC	0,540	0,116	0,403	0,757	0,222	0,317	0,420	0,962	0,531	0,581	0,001
	Variance not equal	t-Test	t	FI	2,771	2,062	1,511	−1,919	1,511	1,044	0,309	−0,826	0,148	0,196	3,834
				BHC	2,554	1,723	1,554	−0,854	1,524	1,309	0,905	−0,096	0,751	0,713	2,810
			Sig.	FI	0,006	0,040	0,131	0,055	0,131	0,297	0,758	0,409	0,882	0,844	0,000
				BHC	0,012	0,089	0,124	0,394	0,131	0,194	0,368	0,923	0,454	0,477	0,006

(*continued*)

Table 13.16 (continued)

			Industry		SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
Private equity buyouts			N		523	750	315	183	461	334	222	113	75	93	93
	Variance equal	Levene	F	FI	6,829	1,419	2,227	4,879	0,012	1,633	0,926	8,674	15,503	3,253	0,619
				BHC	1,412	0,277	0,464	1,095	0,008	0,334	0,198	1,963	4,436	0,722	0,434
			Sig.	FI	0,009	0,234	0,136	0,028	0,914	0,202	0,337	0,004	0,000	0,073	0,432
				BHC	0,235	0,599	0,496	0,297	0,927	0,564	0,657	0,163	0,038	0,397	0,512
		t-Test	t	FI	−0,973	0,771	−0,296	−0,119	0,925	−0,378	−0,263	−0,717	−1,721	−0,535	3,282
				BHC	−0,393	0,490	−0,036	0,044	0,612	−0,081	0,000	−0,273	−0,824	−0,190	2,487
			Sig.	FI	0,331	0,441	0,768	0,906	0,355	0,706	0,793	0,474	0,087	0,593	0,001
				BHC	0,694	0,624	0,971	0,965	0,541	0,936	1,000	0,785	0,412	0,850	0,014
	Variance not equal	t-Test	t	FI	−1,703	1,038	−0,371	−0,130	1,037	−0,490	−0,288	−0,674	−1,469	−0,467	3,401
				BHC	−1,159	0,807	−0,064	0,073	0,808	−0,151	−0,001	−0,452	−1,106	−0,300	2,364
			Sig.	FI	0,089	0,300	0,711	0,897	0,300	0,625	0,774	0,501	0,145	0,642	0,001
				BHC	0,250	0,425	0,949	0,942	0,425	0,881	0,999	0,652	0,272	0,764	0,023

Notes: The table shows the results of the two-tailed t-test ($\alpha = 5\%$) of the excess IRR (E IRR) comparison between financial institutions (FI) and bank holding companies (BHC) and the eleven other industry segments. The number (N) of transactions is also reported.
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

Table 13.17 Statistical Significance of Public Market Equivalent

			Industry		SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
All private equity transactions			N		2.980	1.472	1.466	1.053	858	596	552	486	247	193	145
	Variance equal	Levene	F	FI	1,310	18,662	13,768	1,966	13,451	4,892	13,473	0,026	12,763	6,501	9,148
				BHC	3,141	14,939	14,339	0,460	11,376	5,616	11,683	0,755	9,456	5,550	6,341
			Sig.	FI	0,252	0,000	0,000	0,161	0,000	0,027	0,000	0,871	0,000	0,011	0,003
				BHC	0,076	0,000	0,000	0,830	0,001	0,018	0,001	0,385	0,002	0,019	0,013
		t-Test	t	FI	2,713	3,414	3,849	0,189	2,476	1,915	2,742	0,804	2,732	2,072	2,488
				BHC	2,092	2,788	3,110	0,649	2,217	1,766	2,391	0,988	2,242	1,766	1,950
			Sig.	FI	0,007	0,001	0,000	0,850	0,013	0,056	0,006	0,422	0,007	0,039	0,013
				BHC	0,037	0,005	0,002	0,517	0,027	0,078	0,017	0,319	0,026	0,079	0,053
	Variance not equal	t-Test	t	FI	2,477	2,350	2,487	0,208	1,898	1,682	2,195	0,802	2,883	2,368	3,296
				BHC	1,090	1,050	1,085	0,451	0,933	0,892	1,017	0,652	1,209	1,101	1,348
			Sig.	FI	0,014	0,019	0,013	0,835	0,059	0,093	0,029	0,423	0,004	0,018	0,001
				BHC	0,280	0,298	0,282	0,653	0,354	0,376	0,313	0,517	0,231	0,275	0,182

(*continued*)

Table 13.17 (continued)

			Industry		SI&I	I&M	HC	TC	CI	R&T	ME	H&S	NR	BM	LE
Private equity buyouts			N		523	750	315	183	461	334	222	113	75	93	93
	Variance equal	Levene	F	FI	2,996	8,065	4,529	1,119	10,046	4,556	4,612	0,092	2,329	3,060	4,192
				BHC	27,926	42,242	26,158	11,124	39,477	27,373	20,352	4,289	8,286	10,348	11,454
			Sig.	FI	0,084	0,005	0,034	0,291	0,002	0,033	0,032	0,761	0,129	0,082	0,042
				BHC	0,000	0,000	0,000	0,001	0,000	0,000	0,000	0,040	0,005	0,002	0,001
		t-Test	t	FI	1,757	2,481	1,676	0,914	2,143	1,655	1,543	0,466	1,207	1,438	1,885
				BHC	3,182	3,904	2,971	1,975	3,565	3,014	2,613	1,294	1,742	1,977	2,205
			Sig.	FI	0,079	0,013	0,095	0,362	0,032	0,099	0,124	0,642	0,229	0,152	0,061
				BHC	0,002	0,000	0,003	0,050	0,000	0,003	0,010	0,198	0,085	0,050	0,029
	Variance not equal	t-Test	t	FI	1,130	1,384	1,185	0,838	1,300	1,143	1,255	0,469	1,576	1,695	2,243
				BHC	0,964	1,018	0,975	0,910	0,999	0,966	0,993	0,839	1,067	1,094	1,209
			Sig.	FI	0,260	0,169	0,238	0,403	0,196	0,255	0,211	0,640	0,117	0,092	0,026
				BHC	0,344	0,318	0,338	0,371	0,327	0,343	0,329	0,408	0,295	0,284	0,237

Notes: The table shows the results of the two-tailed t-test ($\alpha = 5\%$) of the public market equivalent (PME) comparison between financial institutions (FI) and bank holding companies (BHC) and the eleven other industry segments. The number (N) of transactions is also reported.
The industries are abbreviated as follows: FI = financial institutions; BHC = bank holding companies; SI&I = software, IT, & Internet; I&M = industrials & manufacturing; HC = health care; TC = telecommunication; CI = consumer industry; R&T = retail & textiles; ME = media; H&S = high-tech & semiconductors; NR = natural resources; BM = basic materials; LE = leisure.

driver of value creation. As an additional step we also investigated whether, despite the absence of leverage as an additional value lever, private equity investments in financial institutions and especially in bank holdings can generate returns that are comparable in magnitude to industries where leverage can be applied as an additional driver of value creation. We calculated various absolute and relative return measures to benchmark financial institutions along with bank holdings to eleven other industry sectors and their respective public benchmarks. We show that neither the performance of financial institution transactions nor the performance part coming from market timing is significantly lower than the performance of other industries. This may be interpreted as additional evidence in favor of the presumption that operational improvement may also be a major value driver in these other industries.

We presented evidence that operational improvement is the main source of value creation in financial institution buyouts and a major value driver in other industries. Future research can contribute to a better understanding of this value lever by differentiating between the components of operational improvement (e.g., sales growth, margin improvement, cost reduction) and by quantifying their individual influence. To answer this question detailed balance sheet and profit-and-loss statement information must be available. That way critical success factors of top buyout transactions can be identified and contribute to a better understanding of why private equity–backed portfolio companies outperform their public peers. At this time private equity firms are largely exempted from disclosure requirements, but have recently made some effort to increase transparency in order to polish their reputation, which suffered severely during the recent downturn due to the failure of numerous portfolio companies. This development, in conjunction with regulatory changes, could lead to better availability of transaction-specific data for researchers and might make the outlined analyses of success factors possible.

Another challenge that research in the field of private equity is facing is to keep up with the ongoing evolution of private equity business models, which is triggered by the current economic environment and regulatory changes. We perceive that more and more private equity firms develop their business model toward investment strategies that were, in the recent past, not the focus of their attention. Future research can deliver valuable insights by analyzing how this expansion into investment vehicles focused on the new industry sector (i.e., pure clean-tech or infrastructure private equity funds) and noncore investment strategies (i.e., distressed debt investments) influences the returns of limited and general partners.

Notes

1. CEPRES is a Munich-based private equity analytics company specializing serving the industry with portfolio management and due diligence systems. For more information, see www.cepres.de.

2. A comprehensive overview of this literature can be found in Cumming et al. 2007.
3. Of course, capital adequacy regulation is not the same for all financial institutions. Therefore we distinguish between highly regulated and capital-intense bank holding companies and other financial services companies.
4. Data according to Venture Economics.
5. Net cash flow is defined as the difference between operating income and capital expenditures.
6. Kaplan (1989) discusses the employee-wealth-transfer hypothesis, the information-advantage hypothesis, and the reduced agency-cost hypothesis.
7. The countries include Argentina, Austria, Belgium, Brazil, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Greece, Guatemala, Hong Kong, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Malaysia, the Netherlands, Norway, Philippines, Poland, Portugal, Puerto Rico, Romania, Russia, Singapore, Spain, Sweden, Switzerland, Taiwan, the United Kingdom, and the United States.
8. See also Schmidt 2003 and Cumming and Walz 2010 for further information.
9. Categories of investment stages: acquisition, early, expansion, growth, growth mezzanine, later, LBO, LBO mezzanine, MBO/MBI, MBO/MBI mezzanine, public to private, recapitalization, recapitalization mezzanine, secondary trading, seed, start-up, unspecified, unspecified buyout.
10. The buyout subsample has a smaller portion of U.S. transactions than the overall private equity sample due to the strong early-stage venture investment industry in the United States.
11. Thrifts are organizations that primarily accept savings account deposits and invest most of the proceeds in mortgages. Savings banks, savings and loan associations, and credit unions are examples of thrift institutions.
12. The distribution also includes payments from a potential sale (e.g., trade sale, secondary sale, IPO, or buyback).
13. Analyses reveal that higher mean PME values are significant compared to software, IT, and Internet private equity transactions.
14. The median market valuation increases for ten industry segments.

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CHAPTER 14

DO PRIVATE EQUITY FUND-OF-FUNDS MANAGERS PROVIDE VALUE?

APRIL KNILL

Private equity funds are those funds that are invested in private firms, that is, firms that do not have stock listed on stock exchanges. These funds are touted to reap higher returns than those of public stock funds. However, due to the fact that this return occurs only when portfolio companies (PCs) exit via merger and acquisition (M&A) or initial public offering (IPO) and the secondary market is very thin, there is very little, if any, liquidity in private equity investments. In fact given that many of the investment companies go defunct, private equity is thought to be exceedingly risky. As such, diversification is attempted by some of these funds. As Knill (2009) points out, diversification at the fund level may lead to a delay in PC exit. This, of course, is counter to what we would expect the motivation of a fund to be. Enter the fund of funds.

These funds are created for the very purpose of diversification. They are exactly what their name implies: a fund *of private equity funds*.[1] According to Piper Jaffray,[2] the largest funds of funds invest in as many as forty to fifty funds! Each one of those funds invests in several portfolio companies. If each invested in just ten portfolio companies, this would mean that funds of funds were invested in 400 to 500 companies. With the marginal benefit of diversification in public stocks petering out at twenty to thirty stocks, is it possible that these funds are worth what they are charging? With as much as 38 percent of worldwide private equity assets controlled by funds of funds,[3][4] this is not a small question, nor is its answer unimportant.

The advent of this investment vehicle is largely due to three things: (1) the acceptance of private equity as a means of increasing portfolio return for institutional investors, (2) limited access to these private equity investments, and (3) the collective lack of knowledge of institutional investors in this class of investments. Inasmuch as knowledgeable, connected professionals in this area of finance make considerably more than an average employee at institutions this job function is outsourced. That said, considering their second layer of fees, could it be worthwhile for institutional investors to invest in connectivity to primary private equity funds? A study by Brown et al. (2004) finds that single-manager hedge funds outperform funds of hedge funds. Specifically, individual hedge funds have higher returns net of fees and better Sharpe ratios.

Whether the private equity counterparty to the mutual fund manager, the "gatekeeper," provides value to investors has yet to be empirically scrutinized. This chapter seeks to remedy this void in research by examining the value of these intermediaries to discern whether they provide the private equity investor with value or whether the institutional investors should invest in gaining the connection necessary to access private equity investments directly.

Motivation

The role of the mutual fund manager in public equity and the role of the gatekeeper in private equity are analogous. The potential value of the mutual fund manager in public equity has been thoroughly analyzed. The research on whether the mutual fund managers provide value began with research on market efficiency (Fama, 1970). The basic argument is that if markets are efficient, all prices are correct and all information is incorporated in current prices. As Malkiel (1995, 549) states, "Securities prices appeared to incorporate all fundamental information so rapidly and efficiently that an uninformed investor, buying at the current tableau of prices, could earn returns equivalent to those available to the experts." This implies that achieving returns in excess of the market by research is impossible, and thus the mutual fund manager is deemed valueless. Jensen (1968) supports this conjecture, finding that after expenses, mutual fund performance is worse than random stock selection (envision the *Wall Street Journal* stock-picking monkey).

The research, however, evolved, and studies started finding contradictory evidence. Henriksson (1984) and Chang and Lewellen (1984) found that mutual fund managers earned their compensation (i.e., fund returns justified their expenses). Ippolito (1989) even found that they justified a bit more since they are slightly above the capital asset pricing model (CAPM) market line before loads. Still others found that they more than earn their keep; among these are Hendricks et al. (1993) and Goetzmann and Ibbotson (1994). There are many other studies, but the intended

message is that the value of fund managers depends on their ability to obtain private information.

Since asymmetric information exists in the private equity market (where the fund-of-funds manager invests), , the potential for private information does exist (see, e.g., Chan, 1983). Gatekeepers who are able to access private information can provide value to investors who cannot access said information. Further, due to the fact that the supply of private equity capital exceeds that of demand, access to these investments becomes extremely valuable. Gatekeepers who are able to access these investments can provide value to those who might not be able to gain access otherwise.

Still, even if there is an argument to be made that this service might be warranted based on asymmetric information and access to deals, do private equity fund-of-funds managers earn their fees? These fees, analogous to primary fund fees, are typically divided into two categories: a management fee (often between 1 and 2 percent) and a carried interest (or "incentive fee"), which, according to Piper Jaffray, can be as high as 20 percent![5] Why so high? These managers will need to pay the fees of the underlying funds (i.e., the funds in which the fund of funds is invested) and have enough left over to guarantee a profit for themselves. These steep fees beg the question as to whether private equity fund-of-funds managers are selling a product that is of value to investors. The answer to this question is important in light of an amendment made by the Securities and Exchange Commission on June 20, 2006 (effective on January 1, 2007). In this amendment a "correction" was made to the Investment Company Act of 1940 allowing the existence of funds of funds as long as they disclose the comprehensive fees they charge (i.e., including the fees of the underlying funds).[6] In short, the SEC wanted to ensure that funds of funds would act responsibly on behalf of the investors who have entrusted their capital to them.

It seems that with the Bernie Madoff scandal, the financial collapse, the taxpayer bailout, and the ensuing "Great Recession," investors are leery of financial managers. Funds-of-funds managers find themselves in a position where they might be asking themselves the very same question: Are we earning our keep? If not, should these fees be reduced? Anecdotal evidence would suggest that the answers are no to the first question and yes to the second. Indeed, the Blackstone Group is giving 65 percent of their fees for their recent "megafund" back to their limited partners.[7] A fund of funds in Europe called ViaNova decided in 2003 to discontinue charging its management fee.[8] Other funds of funds are slashing fees in an effort to provide a more performance-based fee structure (see Christoffersen, 2001 for a discussion of money market funds).

Methodology

Since return in private equity investments is achieved only when portfolio companies exit, the value of the gatekeeper will need to be examined relative to the

portfolio company's exit. Following Knill (2009), I examine the gatekeeper's impact on the probability of the PC's outcome. In this way, value is defined as the influence on PC exit, or equivalently, the gatekeeper's talent at picking winners (see, e.g., Lerner et al., 2007, who find that endowments are superior at picking winners). I also look at the costs of going public, which is examined in the underpricing of IPO literature. Specifically I define value using the return to IPO following such papers as Ritter (1991) and Megginson and Weiss (1991).

To ascertain how gatekeepers provide value, defined as the gatekeeper's talent at picking winners, I look at the impact of venture capital (VC) firm type on PC outcome (i.e., defunct, private, subsidiary, and public). In this way I can look at the gatekeeper's ability to pick winners, both in and of itself and relative to other firm types. I use a multinomial logit model to regress the following:

$$\Pr(CurrentStatus_j) = \Psi(\alpha + \beta_0 Inv_i + \beta_1 X_i + \beta_2 I_j + \beta_3 Y + \beta_4 FirmType_i) \quad (1)$$

where *CurrentStatus* is the current standing of the entrepreneurial (PC) company *j* (i.e., defunct, private, public, or subsidiary).[9] Ψ is the cumulative logistic probability distribution function. Inv_i is a vector of VC investment characteristics that control for the timing of the investment, such as the term of the investment (Investment Term) and the number of years since the previous VC investment (Years Since Last Inv). X_i is a vector of VC characteristics, including the approximate number of investments a manager at the VC personally tends to (Port Size/Mgr), VC's preferred role in a syndication (Prefer to Originate), the number of previous IPOs, the number of successful funds the VC has raised (Expertise), and the level of risk the VC takes on (Risk). The figures in X_i are averaged over the investment term since the observations in this section are VC/PC-relationship-specific. I_j is the market-to-book ratio for the industry to which the PC belongs (Industry M/B). Y is a vector of macroeconomic variables, including a proxy for the level of VC fundraising (Number of Deals) and general market conditions (S&P 500 Return), and a dummy variable indicating whether the last year of VC investment was during the IT bubble (Bubble). Figures in Y are consistent with the last year of VC investment. *FirmType*, our variable of interest, is the type of venture capital firm. Robust errors are clustered around PC to control for firm effects.[10]

To ascertain how gatekeepers affect the money "left on the table" when PCs exit via IPO, I look at the impact of VC firm type on IPO return (i.e., defunct, private, subsidiary, and public). I use the following regression model:

$$Ret_j = \Psi(\alpha + \beta_0 Inv_i + \beta_1 X_i + \beta_2 I_j + \beta_3 Y + \beta_4 FirmType_i) \quad (2)$$

where Ret_j is the return on the IPO and all other variables are as previously defined. If gatekeepers provide value to the pre-issue shareholders (those that pay the fund-of-funds fees), we should see a negative coefficient on *FirmType* (for explanations of the underpricing phenomenon and its characteristics, see Ritter, 1991; Megginson and Weiss, 1991; Loughran and Ritter, 2002).

Finally, to determine whether or not the return-to-risk ratio is impacted by firm type, I examine the following regression:

$$RRR_j = \Psi(\alpha + \beta_0 Inv_i + \beta_1 X_i + \beta_2 I_j + \beta_3 Y + \beta_4 FirmType_i) \quad (3)$$

where *RRR* is the return-to-risk ratio and is calculated as the return from close to offer scaled by the fitted probability of a firm not exiting (i.e., PC Outcome equal to either Defunct or Remain Private) from equation (1). All other variables are as previously defined, with the exception of vector *X*, which no longer incorporates risk. This is due to obvious conflicts with the dependent variable. Since this regression follows that in equation (2), we once again expect to see a negative coefficient on *FirmType* if gatekeepers provide value to their pre-issue shareholders.

Data

The data set used in this analysis is from Knill (2009) (see Table 14.1). In this sample of venture capital and portfolio company pairings, I have information on venture capitalists, portfolio companies, and investment specifics. VC characteristics are collected from SDC Platinum and Galante's Private Equity and Venture Capital Directory. These additional characteristics include portfolio size per manager, whether or not the VC prefers to originate deals, VC firm type, VC expertise, VC number of previous IPOs, and indicator variables describing whether or not the VC invests in information technology and early-stage ventures.

Portfolio Size per Manager accounts for the number of companies that each manager must oversee. This is based on the literature that finds that there is value in the hand-holding that VCs provide through their management (Hellmann, 2000; Hellmann and Puri, 2000, 2002; Kaplan and Strömberg, 2001). Prefer to Originate is included to control for the VC's preferred role in a syndication and its influence on PC exit (Cumming et al., 2006). According to Lerner (1994, 16), "Syndicating first-round venture investments may lead to better decisions about whether to invest in firms." This implies that VCs that lead (or even participate in) syndications will invest in higher quality PCs, and the resulting probability of exit should be higher.

Some VCs are just more knowledgeable than others due to experience and their gained skill set, leading to implications for PC current status (Megginson and Weiss, 1991; Hsu, 2004). To control for this, I include a proxy for VC skill, Expertise, derived from the number of funds a VC has successfully raised. This proxy implicitly assumes retention of VC management. This assumption should not be problematic as long as venture capital firms are able to hire similarly talented executives

Table 14.1 Variable Definitions and Sources

Variable	Definition	Source
VC Characteristics		
Prefer to Originate	A dummy variable describing the preferred role VC_i takes in syndications equal to 1 if the VC prefers to originate and 0 otherwise.	SDC Platinum
Previous IPOs	The number of IPOs for which VC_i is responsible.	SDC Platinum
Expertise	The number of successful funds VC_i has closed.	SDC Platinum
Risk	An index from 0 (low) to 2 (high) that sums IT Dummy and Early-Stage Dummy, indicators of whether VC_i invests in the IT and/or Early-Stage PCs, respectively.	SDC Platinum
VC Type		
Fund of Funds	An indicator variable that takes on a value of 1 if the firm is a private equity fund of funds and 0 otherwise.	SDC Platinum
Corporate	An indicator variable that takes on a value of 1 if the firm is a corporate investor and 0 otherwise.	SDC Platinum
Affiliate	An indicator variable that takes on a value of 1 if the firm is an affiliate and 0 otherwise.	SDC Platinum
Commercial Bank Affiliate	An indicator variable that takes on a value of 1 if the firm is a commercial bank affiliate and 0 otherwise.	SDC Platinum
Investment Bank	An indicator variable that takes on a value of 1 if the firm is an investment bank and 0 otherwise.	SDC Platinum
Private Equity Firm	An indicator variable that takes on a value of 1 if the firm is a private equity firm and 0 otherwise.	SDC Platinum
SBIC	An indicator variable that takes on a value of 1 if the firm is a small business investment company and 0 otherwise.	SDC Platinum
Investment Specifics		
Investment Term	The year VC_i last invested in PC_j minus year VC_i first invested in PC_j.	SDC Platinum
Year Last Inv	The year in which VC_i last invested in PC_j.	SDC Platinum
Industry M/B	The market-to-book ratio for the industry to which PC_j belongs (Data Item 24*Data Item 25)/(Data Item 60).	DataStream
Portfolio Size/Mgr	The number of PCs in which VC fund invests divided by the number of managerial staff in the VC.	SDC Platinum
Market Conditions		
Number Deals	The natural log of the number of VC deals (investments) at time t.	VentureXpert
S&P 500 Return	The return on the S&P 500 index.	Standard & Poor's
Bubble	Dummy variable if time t is during the market bubble (t = 1998, 1999, 2000)	

to lead them. Further, Expertise serves to control for VC grandstanding, a problem brought to light by Gompers (1996).

Similar to Expertise, but judging more specifically a VC's track record, is Number of Previous IPOs. This is the number of IPOs for which a VC is responsible. The effect of a VC's track record on PC exit is obvious. The more successful a VC has been in the past, the more successful (i.e., PC exit via IPO or M&A) a VC will be in the future.

Indicator variables for the riskiest sectors of the industry and stage diversification dimensions are added together to create the variable Risk. Gompers and Lerner (1999) and Norton and Tenenbaum (1993) explain that investment at certain stages entails more risk and, accordingly, more opportunity than at other stages. Similarly there are some industries that are riskier than others. Due to the different opportunity sets available in these categories, I include an index that sums the two indicator variables for the stage and industry perceived as riskier than the rest: information technology (IT Dummy) and early-stage investments (Early-Stage Dummy). Since each indicator variable can be at least 0 and at most 1, Risk is an index from 0 to 2. I include this index to neutralize any impact on PC outcome or the return it receives after its exit.

SDC Platinum provides data on the PCs in which VCs invest. There are 121,122 PC/VC investment observations. Specifics about the VC/PC investment relationship are also obtained. They are Investment Term, Years Since Last Inv, and Industry Market-to-Book. Investment Term and Years Since Last Inv are included to control for the average term of investment. It is more likely that a firm would have exited the venture capital cycle if the term is longer or if the last investment occurred less recently. Industry Market-to-Book is included to control for any cyclical impact regarding the industry. This is included based on several papers in the area, including Cumming and MacIntosh (2003a) and Cumming et al. (2006). Brau et al. (2003) find that this variable increases the propensity of a given PC to exit via M&A.

Macroeconomic variables such as Number of Deals, S&P 500 Return, and Bubble are included to control for the general state of the VC industry and the market. Number of Deals provides a proxy for the general fundraising levels. S&P 500 Return is included to control for public market conditions. This variable will likely pick up the countercyclical nature of the venture capital industry (Groshen and Potter, 2003). Following studies such as Cumming et al. (2006), I include Bubble to account for the increased probability of exit during the IT bubble period (1998–2000).

Firm Type is the variable of interest. VC firms can either be a fund of funds, a corporate VC, an affiliate, a commercial bank affiliate, an investment bank, a private equity firm, or a small business investment company (SBIC). Analyses are executed separately using an indicator variable for firm type (i.e., firm type takes on a value of 1 if the VC is a fund of funds and 0 otherwise). This approach allows me to see how each VC firm type does in the relevant performance value relative to the others. Given that the majority of VC firm types (other than funds of funds) undertake primary investments, when firm type is proxied with the fund-of-funds indicator variable, it gauges its performance relative to primary VC investors.

A list of summary statistics is found in Table 14.2.

Table 14.2 Data Characteristics

	Obs.	Mean	Std. Dev.	Min	Max
VC Characteristics					
Prefer to Originate	7,599	0.95	0.20	0	1
Previous IPOs	7,599	0.12	1.13	0	32
Expertise	7,599	2.93	0.84	0	13
Risk	7,599	0.10	0.37	0	2
VC Type					
Fund of Fund	7,599	0.02	0.15	0	1
Corporate	7,599	0.20	0.40	0	1
Affiliate	7,599	0.05	0.21	0	1
Commercial Bank Affiliate	7,599	0.02	0.16	0	1
Investment Bank	7,599	0.07	0.25	0	1
Private Equity Firm	7,599	0.53	0.50	0	1
SBIC	7,599	0.02	0.14	0	1
Investment Characteristics					
Investment Term	121,122	2.59	0.94	0	3.95
Yrs Since Last Inv	121,122	2.61	5.39	−1	35
Portfolio Size/Mgr	121,122	4.34	3.05	−8.57	9.90
Industry M/B	54	3.16	5.17	−7.46	20.43
Market Conditions					
Number of Deals	9	8.28	0.36	7.99	9.00
S&P 500 Return	9	2.25	17.48	−21.98	28.41
Bubble	9	0.23	0.42	0	1

Notes: Prefer to Originate describes the VCs preferred role in a syndication. Previous IPOs is the number of IPOs for which VC^i has been responsible. Expertise is the number of funds the venture capitalist has raised before time t. Risk is an index from 0 to 2 that sums IT Dummy and Early-Stage Dummy, indicators of whether VC^i invests in the IT and/or Early-Stage PCs, respectively. Firm Type variables (under category VC Type) are dummy variables that take on a value of 1 if they are the firm type listed and 0 otherwise. Investment Term is the natural log of the difference between the year of last investment minus the year of first investment. Years Since Last Inv is 2006 minus the year that the VC made its last investment in the PC. Portfolio Size/Mgr is the number of PCs in which VC invests divided by the number of managerial staff in VC. Industry M/B is the market-to-book ratio of the industry to which PC^j belongs. Number of Deals is the natural log of the number of deals (investments) in the VC industry at time t. S&P 500 is the annual return on the S&P 500 index. Bubble is an indicator variable that is 1 if time t is the year 1998, 1999, or 2000.
Source: VentureXpert.

The vast majority of variables used within specifications do not exhibit any real conformance. There is only one pairwise correlation value of concern: Number of Deals and Bubble in the VC regressions (Table 14.3), at 0.90. This correlation is not surprising. Specifications excluding this variable (e.g., using time dummies instead of a Bubble dummy) exhibit qualitatively identical results; the inclusion of these variables does not seem to confound the results. As such, the variables in question are included based on their relevance to the analysis. Correlation values of these variables are displayed in Table 14.3. The values in these tables indicate that heteroskedasticity is not a significant concern.

Results

Before delving into the analysis, it is worthwhile to look at how funds of funds perform relative to other funds in a univariate test (Table 14.4). Specifically I compare the proportion of the investments for different firm types that wind up going defunct, remaining private, exiting via acquisition, or exiting via IPO. The first test comprises the entire sample and shows that approximately 12.3 percent of the portfolio companies wind up going out of business (i.e., defunct). Almost 39 percent are still private as of the most recent date that the PC information was updated by VentureXpert. Close to 30 percent and 19 percent of the PCs exit via M&A and IPO, respectively. Test 2 compares the proportions for each current status for funds of funds versus other VC firm types (collectively). Tests 3 through 8 compare funds of funds to other specific firm types (i.e., funds of funds versus corporate VCs or funds of funds versus affiliates). Regardless of the firm type compared, funds of funds have a smaller proportion of their investments going defunct. Although this is technically good news, depending on the risk level this may not be due to stock-picking prowess. This result could be found when an investor has a more conservative investing style. Indeed looking to the last three proportions comparisons, it is evident that the PCs in which funds of funds invest are less likely to exit. Regardless of the mode of exit, a smaller proportion of funds-of-funds PCs cross the finish line, so to speak. Rather than investing in winners, they seem to be investing in laggards. Inasmuch as investors earn a return only when the PC exits, these results suggest that gatekeepers do not earn their keep. It should be noted, however, that these results do not necessarily mean that funds-of-funds PCs don't exit—it means that they haven't exited *yet* (though for some older investments, it probably does mean that they never exit). A more precise view is that the time to exit is increased. This result is consistent with the findings of Knill (2009), which suggest that diversification delays PC exit. All else being equal, investors would prefer to have $1 today versus $1 tomorrow, so a delay in exit is bad news—certainly not a fee-worthy performance. These results are also consistent with

Table 14.3 Correlation

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Investment Term (1)	1.00																
Yrs Since Last Inv (2)	**−0.29**	1.00															
Portfolio Size/Mgr (3)	**0.25**	**−0.09**	1.00														
Industry M/B (4)	**−0.05**	**0.08**	0.00	1.00													
Prefer to Originate (5)	**−0.03**	0.00	**0.30**	**0.03**	1.00												
Previous IPOs (6)	**0.09**	**0.08**	**−0.18**	0.00	**−0.20**	1.00											
Expertise (7)	**0.09**	**0.02**	**−0.18**	**−0.01**	**−0.06**	**0.53**	1.00										
Risk (8)	**0.05**	**−0.05**	**−0.41**	**−0.05**	**−0.41**	**0.39**	**0.40**	1.00									
Number of Deals (9)	**−0.07**	**0.26**	**−0.04**	**0.29**	**−0.01**	**0.04**	**0.02**	0.00	1.00								
S&P 500 Return (10)	**0.14**	**0.22**	**0.04**	**−0.09**	**0.01**	**0.04**	**0.03**	0.00	**−0.41**	1.00							
Bubble (11)	**−0.16**	**0.85**	**−0.06**	**0.19**	0.00	**0.09**	**0.04**	**−0.03**	**0.54**	**0.26**	1.00						
Fund of Fund (12)	**−0.02**	0.00	**−0.14**	0.00	**−0.05**	**0.02**	**0.20**	**0.06**	0.00	**−0.02**	**−0.01**	1.00					
Corporate VC (13)	**−0.09**	**0.14**	**−0.04**	0.00	**0.03**	**−0.04**	**−0.06**	**−0.05**	**0.06**	**−0.02**	**0.11**	**−0.02**	1.00				
Affiliate (14)	**−0.04**	**0.04**	**−0.08**	0.00	**0.02**	**−0.04**	0.00	0.00	**0.01**	0.00	**0.03**	**−0.03**	**0.11**	1.00			
Commercial Bank Affiliate (15)	**0.04**	**0.09**	**−0.08**	**0.02**	**−0.05**	**−0.03**	**−0.04**	**0.01**	**0.05**	0.00	**0.09**	**−0.03**	**0.13**	**−0.03**	1.00		
Investment Bank (16)	**−0.02**	**0.04**	**−0.12**	**0.01**	**−0.13**	**0.03**	**−0.08**	**−0.04**	**0.02**	0.00	**0.04**	**−0.04**	**−0.01**	**−0.04**	**−0.05**	1.00	
Private Equity Firm (17)	**−0.04**	**−0.04**	**0.10**	**0.01**	−0.01	**0.11**	**0.11**	**0.15**	**−0.02**	0.00	**−0.04**	**−0.23**	**−0.16**	**−0.23**	**−0.27**	**−0.34**	1.00
SBIC (18)	**0.01**	**0.07**	**−0.04**	**0.01**	**0.01**	**−0.04**	**−0.05**	**−0.07**	**0.03**	**0.03**	**0.08**	**−0.02**	**0.03**	**−0.02**	**−0.02**	**−0.03**	**−0.18**

Notes: This table shows pairwise correlation of the variables. Investment Term is the natural log of the difference between year of last investment minus the year of first investment. Years Since Last Inv is 2010 minus the year that the VC made its last investment in the PC. Portfolio Size/Mgr is the number of PCs in which VC invests divided by the number of managerial staff in VC. Industry M/B is the market-to-book ratio of the industry to which PC^j belongs. Prefer to Originate describes the VCs preferred role in a syndication. Previous IPOs is the number of IPOs for which VC^i has been responsible. Expertise is the number of funds the venture capitalist has raised before time t. Risk is an index from 0 to 2 that sums IT Dummy and Early-Stage Dummy, indicators of whether VC^i invests in the IT and/or Early-Stage PCs, respectively. Number of Deals is the natural log of the number of deals (investments) in the VC industry at time t. S&P 500 is the annual return on the S&P 500 index. Bubble is an indicator variable that is a 1 if time t is the year 1998, 1999, or 2000. Firm Type variables (Variables 12 through 18) are dummy variables that take on a value of 1 if they are the firm type listed and 0 otherwise. Boldface indicates a significance level of 1% or 5%.
Source: VentureXpert.

Table 14.4 Difference in Means

Test	Firm Type	N	Proportion of Firms That Go Defunct	Difference Test Statistic	Proportion of Private Firms	Difference Test Statistic	Proportion of Acquisition Exits	Difference Test Statistic	Proportion of IPO Exits	Difference Test Statistic
1	Full Sample	121,122	0.123		0.389		0.298		0.190	
2	FoF vs. other firm types	3,423	0.106	**-0.020*** **	0.463	**0.070*** **	0.264	**-0.031*** **	0.168	**-0.018*** **
		131,946	0.126		0.393		0.295		0.186	
3	FoF vs. Corporate	3,423	0.106	**-0.029*** **	0.463	**0.084*** **	0.264	**-0.044*** **	0.168	-0.037
		10,705	0.135		0.378		0.308		0.179	
4	FoF vs. Affiliate	3,423	0.106	**-0.021*** **	0.463	**0.127*** **	0.264	**-0.033*** **	0.168	**-0.073*** **
		4,252	0.127		0.336		0.297		0.240	
5	FoF vs. C.B. Affiliate	3,423	0.106	**-0.038*** **	0.463	**0.210*** **	0.264	**-0.107*** **	0.168	**-0.065*** **
		4,925	0.143		0.253		0.371		0.232	
6	FoF vs. Inv. Bank	3,423	0.106	**-0.018*** **	0.463	**0.127*** **	0.264	**-0.041*** **	0.168	**-0.068*** **
		8,157	0.124		0.336		0.305		0.236	
7	FoF vs. PE Firm	3,423	0.106	**-0.017*** **	0.463	**0.060*** **	0.264	**-0.028*** **	0.168	**-0.014** **
		87,509	0.123		0.403		0.292		0.182	
8	FoF vs. SBIC	3,423	0.106	**-0.068*** **	0.463	**0.062*** **	0.264	**-0.036*** **	0.168	**-0.042*** **
		2,227	0.174		0.401		0.300		0.126	

Notes: The sample is comprised of the universe of fund investments offered by VentureXpert. Firm Type variables (first column) are dummy variables that take on a value of 1 if they are the firm type listed and 0 otherwise. FoF is fund of funds. *, **, *** indicate significance levels of 10, 5, and 1%, respectively.

those of Brown et al. (2004). Though in a different investment arena (i.e., hedge funds rather than private equity), the idea is the same. These results foreshadow the negative performance that will be found in the rest of the analysis.

Table 14.5 displays the findings of the differing impacts of firm type on PC outcome (i.e., defunct, remain private, subsidiary, or public). There are several notable findings. The first is that there are several firm types that are associated with a statistically significant probability of PC outcome being defunct (specification 1). Corporate VC, affiliate, commercial bank affiliate, and investment bank all show a positive significant marginal effect of firm type on the probability of the PC's going defunct. The highest among these was affiliate, with a marginal effect of 1.2

Table 14.5 PC Outcome

	Current Status = Defunct	Current Status = Remain Private	Current Status = Subsidiary	Current Status = Public
Firm Type	1	2	3	4
Fund of Funds	−0.017***	0.029***	0.029***	−0.042***
	[0.003]	[0.003]	[0.003]	[0.005]
Pseudo R-squared	0.0384	0.0384	0.0384	0.0384
Corporate VC	0.011***	−0.017***	−0.017***	0.023***
	[0.003]	[0.003]	[0.003]	[0.004]
Pseudo R-squared	0.0383	0.0383	0.0383	0.0383
Affiliate	0.012***	−0.016***	−0.016***	0.020***
	[0.004]	[0.004]	[0.004]	[0.007]
Pseudo R-squared	0.0383	0.0383	0.0383	0.0383
Commercial	0.011***	−0.029***	−0.029***	0.047***
Bank Affiliate	[0.004]	[0.004]	[0.004]	[0.007]
Pseudo R-squared	0.0384	0.0384	0.0384	0.0384
Investment Bank	0.007**	−0.010***	−0.010***	0.013***
	[0.003]	[0.003]	[0.003]	[0.005]
Pseudo R-squared	0.0385	0.0385	0.0385	0.0385
Private Equity	−0.003**	0.001	0.001	0.001
Firm	[0.001]	[0.001]	[0.001]	[0.002]
Pseudo R-squared	0.0382	0.0382	0.0382	0.0382
SBIC	0.002	0.023***	0.023***	−0.047***
	[0.004]	[0.004]	[0.004]	[0.006]
Pseudo R-squared	0.0386	0.0386	0.0386	0.0386
Observation	121,122	121,122	121,122	121,122

Notes: The following multinomial logit regression is used:
$\Pr(CurrentStatus_j) = \Psi(\alpha + \beta_0 Inv_i + \beta_1 X_i + \beta_2 I_j + \beta_3 Y + \beta_4 FirmType_i)$ Firm Type variables (column 1) are dummy variables that take on a value of 1 if they are the firm type listed and 0 otherwise. Marginal effects are reported, and robust standard errors (clustered around PC) are given in parentheses. Control variables are left out for brevity.
*,**,*** indicate significance levels of 10, 5, and 1%, respectively.
Source: VentureXpert.

percent. Corporate VC and commercial bank affiliate are close, at 1.1 percent. Our firm type of interest, fund of funds, sees a decrease in the probability of its portfolio companies going defunct (–1.7 percent). This meshes nicely with the fact that its managers are likely trying to reduce risk, perhaps choosing less risky funds than that of the four other firm types. The results up to this point suggest that funds of funds are achieving their desired goal of risk reduction. This is, of course, only half of the equation, though.

Specification 2 shows that most firm types see a reduction in the probability that the PC will remain private, which is good news assuming that they will eventually exit (versus going defunct). Based on the first results, however, we know this is not necessarily the case. A positive significant marginal effect on the probability of remaining private is not desired since exit is the only way that return is achieved in private equity. Unfortunately funds of funds see a positive significant marginal effect of 2.9 percent. In one sense this is not surprising since funds of funds are not set up to help PCs, one of the benefits touted by venture capitalists. That said, the managers of funds of funds are removed from the PC since they are invested in a fund and not directly in the PC itself, so we would not expect the hand-holding to happen at this level. It could mean that funds of funds don't generally invest in funds from those that do hand-holding.

With regard to exiting (specifications 3 and 4), it appears that, depending on the firm type, a certain type of exit is preferred. For example, funds of funds and SBICs seem to increase the odds relative to their peers of their invested PCs exiting via acquisition (M&A). Conversely, corporate VCs, affiliates, commercial bank affiliates, and investment banks increase the odds of their invested PCs exiting via the market (IPO) relative to their peers. Marginal effects are statistically significant in almost all cases, excluding private equity funds. Those that are statistically significant are economically meaningful as well. Funds of funds and SBICs have marginal effects of 2.9 percent and 2.3 percent, respectively. Corporate VCs, affiliates, commercial bank affiliates, and investment banks have marginal effects of 2.3, 2, 4.7, and 1.3 percent, respectively. With sample average probabilities of exiting via M&A or IPO of 29.8 and 19 percent, respectively, these figures are meaningful.

Overall these results suggest that funds of funds invest in firms that are remaining private or exiting via acquisition. Although these firms are not going defunct, they are failing to exit in the preferred mode, which, according to Schwienbacher (2002), Fleming, (2004) and Cumming and MacIntosh (2003a, 2003b), is IPO. These studies argue that M&A is an inferior exit to IPO (i.e., firms exiting via M&A are of lower quality than those exiting via IPO). Whether these results stem from ultraconservative investment, poor investment choices, or other motivations is unclear at this point in the analysis.

Once the nonrandomness of the decision to exit is considered, funds of funds fare a bit better. Although there is no evidence to support their being more likely than others to invest in firms that exit via IPO, the statistically significant negative marginal effect seen in specification 4 of Table 14.5 is not seen in Table 14.6 (specification 1). Interestingly once the nonrandomness is taken into consideration, both

Table 14.6 Nonrandomness of the Decision to Exit

	Firm Type = Fund of Fund		Firm Type = Corporate VC		Firm Type = Affiliate		Firm Type = Com Bank Affiliate		Firm Type = Investment Bank		Firm Type =Private Equity Firm		Firm Type = SBIC	
	IPO	exit	IPO	exit	IPO	exit	IPO	exit	IPO	exit	IPO	exit	IPO	exit
Investment Term	−0.04***		−0.04***		−0.04***		−0.04***		−0.04***		−0.04***		−0.04***	
	[0.01]		[0.01]		[0.01]		[0.01]		[0.01]		[0.01]		[0.01]	
Yrs Since Last Inv	−0.01***		−0.01***		−0.01***		−0.01***		−0.01***		−0.01***		−0.01***	
	[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]	
Portfolio Size/Mgr	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]	
Industry M/B	0.00***		0.00***		0.00***		0.00***		0.00***		0.00***		0.00***	
	[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]	
Prefer to Originate	0.00		0.00		0.00		0.00		0.02		0.00		0.00	
	[0.02]		[0.02]		[0.02]		[0.02]		[0.02]		[0.02]		[0.02]	
Previous IPOS	0.00		0.00		0.00		0.00		0.00		0.00		0.00	
	[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]	
Expertise	0.01***		0.01***		0.01***		0.01***		0.01***		0.01***		0.01***	
	[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]		[0.00]	
Risk	−0.06***		−0.06***		−0.06***		−0.06***		−0.05***		−0.06***		−0.06***	
	[0.01]		[0.01]		[0.01]		[0.01]		[0.01]		[0.01]		[0.01]	
No Deals	−0.02		−0.02		−0.02		−0.02		−0.02		−0.02		−0.02	
	[0.04]		[0.04]		[0.04]		[0.04]		[0.04]		[0.04]		[0.04]	
S&P 500 Return	−0.09		−0.09		−0.09		−0.09		−0.09		−0.09		−0.09	
	[0.07]		[0.07]		[0.07]		[0.07]		[0.07]		[0.07]		[0.07]	

(*continued*)

Table 14.6 (continued)

	Firm Type = Fund of Fund		Firm Type = Corporate VC		Firm Type = Affiliate		Firm Type = Com Bank Affiliate		Firm Type = Investment Bank		Firm Type =Private Equity Firm		Firm Type = SBIC	
	IPO	exit	IPO	exit	IPO	exit	IPO	exit	IPO	exit	IPO	exit	IPO	exit
Firm Type	−0.01 [0.04]		−0.02 [0.02]		0.13*** [0.03]		−0.03 [0.03]		0.14*** [0.02]		0.00 [0.01]		−0.24*** [0.04]	
Update in 1998		0.53*** [0.01]		0.53*** [0.01]		0.53*** [0.01]		0.53*** [0.01]		0.53*** [0.01]		0.53*** [0.01]		0.53*** [0.01]
Update in 1999		0.54*** [0.02]		0.54*** [0.02]		0.54*** [0.02]		0.54*** [0.02]		0.54*** [0.02]		0.54*** [0.02]		0.54*** [0.02]
Update in 2000		0.42*** [0.01]		0.42*** [0.01]		0.42*** [0.01]		0.42*** [0.01]		0.42*** [0.01]		0.42*** [0.01]		0.42*** [0.01]
Model Chi²	149.32***		150.61***		168.75***		150.87***		194.08***		149.36***		182.65***	

Notes: The Heckman selection model used for entrepreneurs is $\Pr(IPO \mid Exit_j) = (\alpha + \beta_0\, Inv_i + \beta_1 X_i + \beta_2 I_j + \beta_3 Y + \beta_4\, Diversification_i)$ where the first–stage regression is $\Pr(Exit_j) = \delta_0 + \delta_1 /_j + \varepsilon$. Exit is defined as PC current public status of Subsidiary or Public. T is a vector of last investment year Bubble time period dummies (i.e., last investment year = 1998, 1999, or 2000). Inv is a vector of investment characteristics such as Investment Term, Years Since Last Inv. Investment Term is the natural log of the difference of date of last investment and date of first investment. Years Since Last Inv is 2006 minus the year that VC^i made its last investment in PC^j. X is a vector of venture capitalist characteristics including Portfolio Size/Mgr, Prefer to Originate, Previous IPOs, Expertise, and Risk. Portfolio Size/Mgr is the number of invested PCs in VC fund scaled by the number of managers. Prefer to Originate describes the VCs preferred role in a syndication. Previous IPOs is the number of previous IPOs for which VC^j is responsible. Expertise is the number of funds the venture capitalist has raised before time t. Risk is an index from 0 to 2 that sums IT Dummy and Early–Stage Dummy, indicators of whether VC^i invests in the IT and/or Early-Stage PCs, respectively. I is the industry market–to–book ratio for the industry to which the PC belongs. Y is a vector of macroeconomic variables including Number of Deals and S&P 500 Return. Number of Deals is the natural log of the number of deals (investments) in the VC industry at time t. S&P 500 Return is the annual percentage return on the S&P 500 for the year that the VC last invested in the PC. Firm Type variables (first row) are dummy variables that take on a value of 1 if they are the firm type listed and 0 otherwise. Marginal effects are reported, and robust standard errors (clustered around PC) are given in parentheses. *, **, *** indicate significance levels of 10, 5, and 1%, respectively.
Source: VentureXpert.

corporate VCs and commercial bank affiliates, the two highest marginal effects from Table 14.5, are no longer statistically significant in their marginal effect of exiting via IPO. Results suggest that affiliates and investment banks seem to do the best with regard to picking "winners"—those that exit via IPO. Their marginal effects are 13 and 14 percent, respectively.

In looking at return to IPO by firm type (Table 14.7), we rely on the IPO underpricing literature to give us an understanding of what we expect to find. Though the reasons posited for the underpricing vary, its existence is universally accepted. The impacts of underpricing are likewise well understood. When investment banks price IPOs, they affect directly the amount of proceeds available for preissue shareholders as well as the dilution of their shares. Though this "cost" is considered an accepted part of the IPO process, it would be informative to know if this cost is significantly different for a given investment firm type.

Private equity firms and SBICs are both associated with a significantly reduced return to IPO compared to their peers. The results for private equity firms mesh nicely with the findings of Megginson and Weiss (1991), who find that the initial IPO returns of venture capital–backed firms are lower than firms not back by venture capital.[11] They hypothesize that this reduced return is in exchange for the affiliation that the venture capitalist offers its portfolio companies.

One firm type, corporate VC, actually sees an increase in return to IPO (or alternatively, money left on the table). This suggests that there is a higher cost associated with going public via a corporate venture capitalist.

The firm type of interest, fund of funds, does not see a significant difference in the return to IPO compared to its counterparts. Though this evidence is not damning, it is not evidence that the fund of funds is earning its keep when it comes to the double layer of fees that it charges.

Figure 14.1 demonstrates the relative performance of the different private equity firm types. These graphs mesh well with the empirical results found in Table 14.7.

Since I am ultimately interested in examining the return by firm type, it makes sense to perform the analysis with the data at fund level. To that end, I collapse the data by average and median. Panel A of Table 14.8 shows the results for the average returns. Corporate VCs are once again associated with a higher cost for going public; when averaged by fund, they leave 43 percent more money on the table than their peers. Investment banks and private equity firms appear to take firms public at a lower cost: 11.9 and 7.8 percent less, respectively, than their peers.

Panel B of Table 14.8 shows the results for median returns. Results are somewhat different when collapsing the data in this way. Only the marginal effect of investment banks remains statistically significant. The difference between the results when collapsing returns by mean and median suggests that these returns are skewed. This is not a surprising revelation given research by Moskowitz and Vissing-Jørgensen (2002), which suggests that returns in private equity are skewed and that there is in fact a preference for this skewness.

In analyzing investments, return is only half of the story. Modern portfolio theory (Markowitz, 1952; Sharpe, 1963, 1964) hypothesizes that rational investors

Table 14.7 PC Return to IPO by Firm

	Firm Type = Fund of Funds	Firm Type = Corporate VC	Firm Type = Affiliate	Firm Type = Commercial Bank Affiliate	Firm Type = Investment Bank	Firm Type = Private Equity Firm	Firm Type = SBIC
	1	2	3	4	5	6	7
Investment Term	−2.248*	−2.082	−2.241*	−2.171*	−2.235*	−2.487*	−2.215*
	[1.286]	[1.265]	[1.287]	[1.271]	[1.286]	[1.290]	[1.286]
Yrs Since Last Inv	−1.212***	−1.156***	−1.205***	−1.193***	−1.207***	−1.234***	−1.203***
	[0.398]	[0.395]	[0.399]	[0.395]	[0.398]	[0.398]	[0.398]
Port Size/Mgr	1.325***	1.568***	1.352***	1.333***	1.331***	1.545***	1.339***
	[0.204]	[0.206]	[0.204]	[0.202]	[0.208]	[0.214]	[0.204]
Prefer to Originate	−1.764***	−1.725***	−1.765***	−1.764***	−1.764***	−1.762***	−1.765***
	[0.300]	[0.297]	[0.300]	[0.300]	[0.300]	[0.300]	[0.300]
Previous IPOs	−6.890***	−7.736***	−6.787***	−6.880***	−6.983***	−6.541***	−6.795***
	[1.947]	[1.958]	[1.945]	[1.950]	[1.909]	[1.929]	[1.938]
Expertise	−0.263**	−0.217*	−0.246**	−0.258**	−0.236**	−0.210*	−0.246**
	[0.120]	[0.115]	[0.116]	[0.116]	[0.118]	[0.115]	[0.116]
Risk	−0.790**	−0.629*	−0.876***	−0.880***	−0.901***	−0.843**	−0.887***
	[0.355]	[0.332]	[0.335]	[0.334]	[0.335]	[0.333]	[0.335]
Industry M/B	7.830***	8.660***	7.923***	7.938***	7.824***	8.730***	7.848***
	[1.231]	[1.249]	[1.236]	[1.237]	[1.256]	[1.287]	[1.239]
No Deals	15.559***	14.822***	15.606***	15.645***	15.613***	15.269***	15.640***
	[5.287]	[5.244]	[5.290]	[5.277]	[5.288]	[5.280]	[5.287]
S&P 500 Return	1.636	1.402	1.663	1.545	1.651	1.371	1.724
	[7.170]	[7.102]	[7.174]	[7.188]	[7.167]	[7.157]	[7.175]

Bubble	−2.682 [4.565]	−2.468 [4.525]	−2.749 [4.572]	−2.787 [4.555]	−2.750 [4.565]	−2.479 [4.550]	−2.704 [4.558]
Firm Type	−3.89 [3.111]	19.450*** [3.090]	−0.344 [3.341]	−3.24 [2.742]	−1.552 [2.516]	−4.455*** [1.297]	−6.481* [3.830]
Constant	−79.018* [44.638]	−76.847* [44.280]	−79.475* [44.649]	−79.703* [44.567]	−79.083* [44.478]	−74.679* [44.621]	−79.656* [44.627]
Observations	7,599	7,599	7,599	7,599	7,599	7,599	7,599
R-squared	0.066	0.071	0.065	0.066	0.065	0.067	0.066

Notes: The following multinomial logit regression is used: $\mathrm{Re}t_j = \Psi(\alpha + \beta_0 Inv_i + \beta_1 X_i + \beta_2 I_j + \beta_3 Y + \beta_4\, FirmType_i)$. Inv is a vector of investment characteristics such as Investment Term, Years Since Last Inv, and Portfolio Size/Mgr. Investment Term is the natural log of the difference of date of last investment and date of first investment. Years Since Last Inv is 2006 minus the year that VC^i made its last investment in PC^j. Portfolio Size/Mgr is the number of invested PCs in VC fund scaled by the number of managers. X is a vector of venture capitalist characteristics including Prefer to Originate, Previous IPOs, Expertise, and Risk. Prefer to Originate describes the VCs preferred role in a syndication. Previous IPOs is the number of previous IPOs for which VC^j is responsible. Expertise is the number of funds the venture capitalist has raised before time t. Risk is an index from 0 to 2 that sums IT Dummy and Early-Stage Dummy, indicators of whether VC^i invests in the IT and/or Early-Stage PCs, respectively. I is the industry market-to-book ratio for the industry to which the PC belongs. Y is a vector of macroeconomic variables including Number of Deals and S&P 500 Return. Number of Deals is the natural log of the number of deals (investments) in the VC industry at time t. S&P 500 Return is the annual percentage return on the S&P 500 for the year that the VC last invested in the PC. Firm Type variables (column 1) are dummy variables that take on a value of 1 if they are the firm type listed and 0 otherwise. Marginal effects are reported, and robust standard errors (clustered around PC) are given in parentheses. *, **, *** indicate significance levels of 10, 5, and 1%, respectively.

Source: VentureXpert.

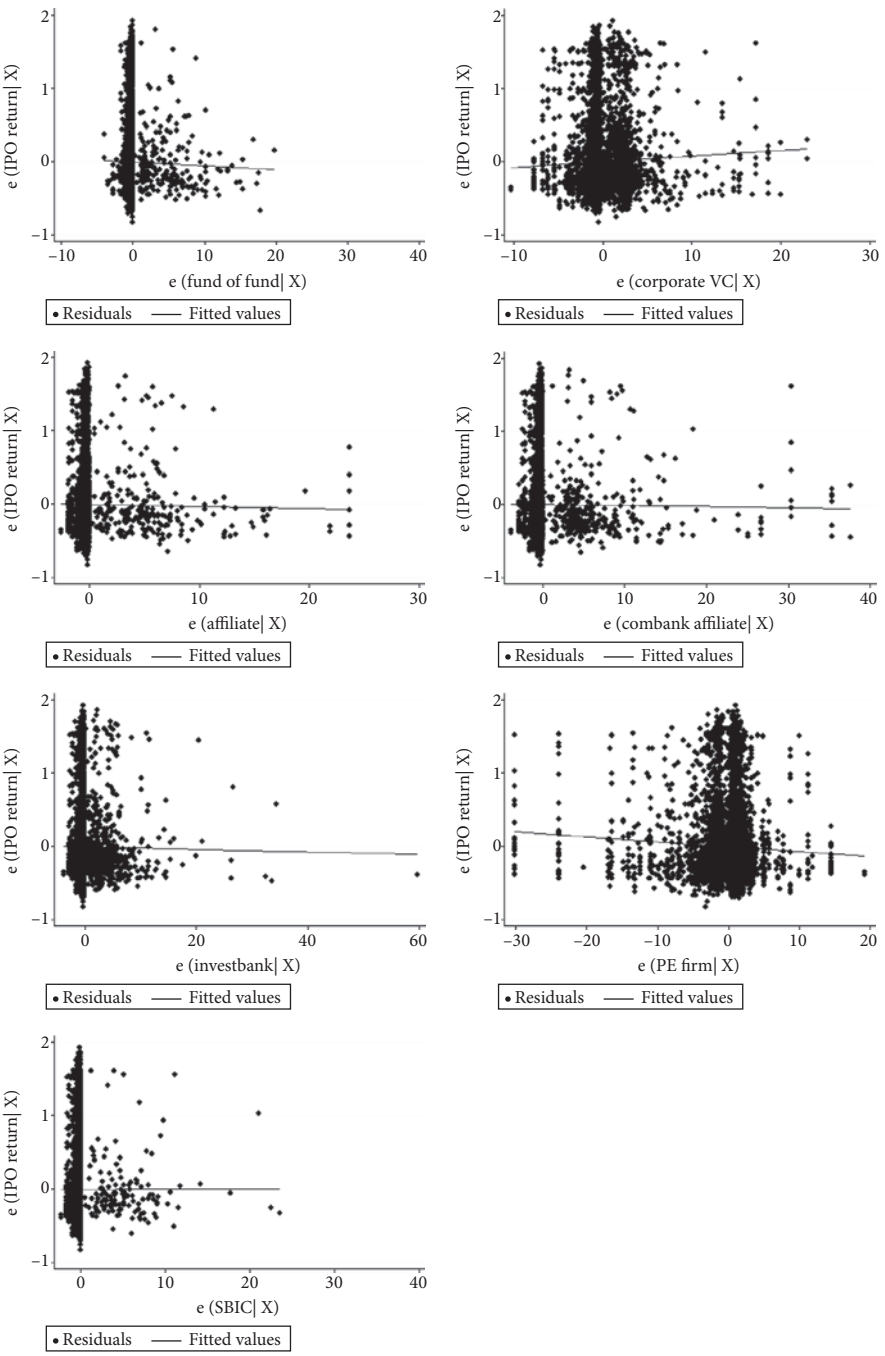

Figure 14.1 Return to IPO by firm type.

These figures are based on the specifications in Table 14.7 and represent the partial scatter plots of the regression plane in PC Return/Firm Type space. Residuals are collected from equation (2) and labeled e(PC Return | X). Each of the Firm Types is individually regressed on all of the control variables listed in equation (2). Residuals are collected and labeled e(Firm Type | X). The graph represents e(PC Return | X) plotted against e(Firm Type | X).

Source: VentureXpert.

Table 14.8 PC Return to IPO by Fund

Panel A: Mean

	Firm Type = Fund of Funds	Firm Type = Corporate VC	Firm Type = Affiliate	Firm Type = Commercial Bank Affiliate	Firm Type = Investment Bank	Firm Type = Private Equity Firm	Firm Type = SBIC
	1	2	3	4	5	6	7
Investment Term	−2.223**	−2.035*	−2.211**	−2.348**	−2.123**	−2.518**	−2.065*
	[1.073]	[1.064]	[1.073]	[1.090]	[1.072]	[1.078]	[1.076]
Yrs Since Last Inv	−0.539*	−0.539*	−0.547*	−0.572*	−0.551*	−0.595**	−0.535*
	[0.290]	[0.288]	[0.290]	[0.293]	[0.290]	[0.291]	[0.290]
Port Size/Mgr	2.160***	2.451***	2.253***	2.236***	2.053***	2.589***	2.206***
	[0.485]	[0.480]	[0.485]	[0.485]	[0.487]	[0.502]	[0.483]
Prefer to Originate	−0.966***	−0.958***	−0.959***	−0.964***	−0.965***	−0.972***	−0.958***
	[0.251]	[0.249]	[0.251]	[0.251]	[0.251]	[0.251]	[0.251]
Previous IPOs	−3.887	−5.334	−3.958	−3.525	−5.383	−3.513	−3.595
	[5.658]	[5.609]	[5.661]	[5.652]	[5.697]	[5.646]	[5.651]
Expertise	−1.048*	−0.914	−0.990*	−0.977*	−0.910	−0.947*	−1.005*
	[0.565]	[0.559]	[0.563]	[0.564]	[0.564]	[0.563]	[0.563]
Risk	−1.855*	−1.587	−2.089*	−2.090*	−2.292**	−2.123*	−2.136*
	[1.120]	[1.085]	[1.092]	[1.092]	[1.094]	[1.090]	[1.092]
Industry M/B	18.398***	17.759***	18.547***	18.461***	17.709***	19.481***	18.387***
	[2.796]	[2.772]	[2.793]	[2.794]	[2.812]	[2.812]	[2.795]
No Deals	10.245*	9.584*	10.148*	9.984*	10.229*	9.726*	10.063*
	[5.581]	[5.535]	[5.581]	[5.589]	[5.577]	[5.578]	[5.582]

(*continued*)

Table 14.8 (continued)

Panel A: Mean

	Firm Type = Fund of Funds	Firm Type = Corporate VC	Firm Type = Affiliate	Firm Type = Commercial Bank Affiliate	Firm Type = Investment Bank	Firm Type = Private Equity Firm	Firm Type = SBIC
	1	2	3	4	5	6	7
S&P 500 Return	−20.020***	−17.907**	−20.112***	−19.949***	−20.106***	−19.617**	−20.267***
	[7.658]	[7.598]	[7.659]	[7.657]	[7.652]	[7.649]	[7.661]
Bubble	−0.091	0.156	−0.005	0.133	0.17	0.262	0.203
	[4.617]	[4.579]	[4.618]	[4.625]	[4.615]	[4.614]	[4.622]
Firm Type	−7.669	42.998***	7.445	6.838	−11.900**	−7.824***	−15.527
	[7.841]	[5.723]	[7.153]	[8.134]	[5.038]	[2.794]	[12.051]
Observations	3,326	3,326	3,326	3,326	3,326	3,326	3,326
R–squared	0.042	0.058	0.042	0.042	0.044	0.044	0.042

Panel B: Median

	Firm Type = Fund of Funds	Firm Type = Corporate VC	Firm Type = Affiliate	Firm Type = Commercial Bank Affiliate	Firm Type = Investment Bank	Firm Type = Private Equity Firm	Firm Type = SBIC
	1	2	3	4	5	6	7
Investment Term	−3.957***	−3.765***	−3.891***	−3.900***	−4.070***	−3.859***	−3.867***
	[1.342]	[1.341]	[1.340]	[1.339]	[1.339]	[1.339]	[1.339]
Yrs Since Last Inv	−0.639*	−0.637*	−0.639*	−0.662*	−0.671*	−0.664*	−0.644*
	[0.379]	[0.379]	[0.379]	[0.380]	[0.379]	[0.379]	[0.379]

Port Size/Mgr	1.695***	1.762***	1.729***	1.740***	1.619***	1.844***	1.741***
	[0.568]	[0.566]	[0.567]	[0.566]	[0.567]	[0.572]	[0.566]
Prefer to Originate	−0.266	−0.272	−0.265	−0.265	−0.267	−0.264	−0.266
	[0.260]	[0.260]	[0.260]	[0.260]	[0.260]	[0.260]	[0.260]
Previous IPOs	9.396	9.334	9.602	9.728	6.308	9.636	9.623
	[6.641]	[6.639]	[6.642]	[6.641]	[6.726]	[6.638]	[6.639]
Expertise	−0.364	−0.324	−0.316	−0.305	−0.245	−0.306	−0.31
	[0.771]	[0.769]	[0.769]	[0.769]	[0.769]	[0.769]	[0.769]
Risk	0.110	−0.076	−0.156	−0.122	−0.388	−0.190	−0.144
	[1.400]	[1.369]	[1.370]	[1.369]	[1.370]	[1.369]	[1.369]
Industry M/B	6.721**	6.728**	6.700**	6.617**	6.108**	7.009**	6.673**
	[2.760]	[2.759]	[2.760]	[2.761]	[2.764]	[2.769]	[2.760]
No Deals	5.500	5.578	5.542	5.365	5.652	5.173	5.405
	[7.337]	[7.336]	[7.340]	[7.338]	[7.329]	[7.340]	[7.338]
S&P 500 Return	−20.323**	−19.817**	−20.205**	−20.222**	−20.328**	−20.166**	−20.518**
	[10.062]	[10.064]	[10.063]	[10.061]	[10.050]	[10.060]	[10.072]
Bubble	−1.675	−1.711	−1.656	−1.438	−1.417	−1.375	−1.492
	[5.997]	[5.996]	[5.998]	[6.000]	[5.990]	[5.999]	[6.001]
Firm Type	−8.643	10.362	−2.185	10.446	−17.881***	−2.932	−9.093
	[9.980]	[7.609]	[9.753]	[11.200]	[6.208]	[2.272]	[14.003]

(*continued*)

Table 14.8 (continued)

Panel B: Median

	Firm Type = Fund of Funds	Firm Type = Corporate VC	Firm Type = Affiliate	Firm Type = Commercial Bank Affiliate	Firm Type = Investment Bank	Firm Type = Private Equity Firm	Firm Type = SBIC
	1	2	3	4	5	6	7
Observations	3,326	3,326	3,326	3,326	3,326	3,326	3,326
R–squared	0.018	0.018	0.017	0.018	0.020	0.018	0.017

Notes: The following multinomial logit regression is used: $\mathrm{Re}\,t_j = \Psi(\alpha + \beta_0 Inv_i + \beta_1 X_i + \beta_2 I_j + \beta_3 Y + \beta_4\, FirmType_i)$. Inv is a vector of investment characteristics such as Investment Term, Years Since Last Inv, and Portfolio Size/Mgr. Investment Term is the natural log of the difference of date of last investment and date of first investment. Years Since Last Inv is 2006 minus the year that VC^i made its last investment in PC^j. Portfolio Size/Mgr is the number of invested PCs in VC fund scaled by the number of managers. X is a vector of venture capitalist characteristics including Prefer to Originate, Previous IPOs, Expertise, and Risk. Prefer to Originate describes the VCs preferred role in a syndication. Previous IPOs is the number of previous IPOs for which VC^j is responsible. Expertise is the number of funds the venture capitalist has raised before time t. Risk is an index from 0 to 2 that sums IT Dummy and Early-Stage Dummy, indicators of whether VC^i invests in the IT and/or Early-Stage PCs, respectively. I is the industry market-to-book ratio for the industry to which the PC belongs. Y is a vector of macroeconomic variables including Number of Deals and S&P 500 Return. Number of Deals is the natural log of the number of deals (investments) in the VC industry at time t. S&P 500 Return is the annual percentage return on the S&P 500 for the year that the VC last invested in the PC. Firm Type variables (column 1) are dummy variables that take on a value of 1 if they are the firm type listed and 0 otherwise. Marginal effects are reported, and robust standard errors (clustered around PC) are given in parentheses. *, **, *** indicate significance levels of 10, 5, and 1%, respectively.

Source: VentureXpert.

should and will diversify away idiosyncratic risk, and thus investors are compensated only for systematic risk. As such, when judging portfolios, or equivalently here private equity managers, it could be argued that it is the return-risk ratio and not simply the return that should be analyzed.

Although a control variable for risk is included in the return analyses (Tables 14.6 and 14.7), the proxy may not accurately represent total risk. It is proxied by an index that is calculated as the sum of two dummy variables: information technology and early stage. These indicator variables take on a value of 1 if the portfolio company is in the information technology industry and the early stage, and 0 otherwise.

Since the return on private equity investments is realized only when a firm exits, perhaps a more suitable proxy would be the probability that a firm will not exit. To calculate such a probability, the regression found in equation (1) is altered so that the dependent variable is now bivariate: no exit (Current Status = Defunct or private) or exit (Current Status = subsidiary or public):

$$\Pr(NoExit_j) = \Psi(\alpha + \beta_0 Inv_i + \beta_1 X_i + \beta_2 I_j + \beta_3 Y + \beta_4 FirmType_i) \quad (4)$$

A fitted value of this probability is used as the new proxy for risk. This value is divided into the mean/median return values used in Table 14.7. The old proxy for risk is dropped from the regression to avoid any problems with endogeneity.

Table 14.9, Panel A, displays the results when PC/VC observations are collapsed to the fund level using means. The results suggest that corporate VCs and commercial bank affiliates leave significantly more money on the table (84.9 and 52.9 percent more, respectively). Once the risk of firm stagnation is controlled for, investors in funds of funds actually see a 36.4 percent savings in the cost of going public. Investment banks see a 20.7 percent reduction in the cost of going public.

When collapsing to the fund level using medians, the results for funds of funds, however, disappear. Conversely, the results for investment banks get stronger both in statistical and economic significance. The lack of conformity in the results for funds of funds suggests that these results may be a result of skewness in the data, and therefore are not reliable. As such, the reduction in costs for funds of funds should be taken lightly. Figure 14.2 offers a graphical representation of firm type risk-adjusted performance.

Conclusions

Given the trend toward funds of funds, a closer examination of the benefits to an extra level of diversification in private equity investments is warranted. This is especially the case because investment in this area is perceived as being very risky

Table 14.9 PC Return to IPO Controlling for Risk

Panel A: Mean

	Firm Type = Fund of Funds	Firm Type = Corporate VC	Firm Type = Affiliate	Firm Type = Commercial Bank Affiliate	Firm Type = Investment Bank	Firm Type = Private Equity Firm	Firm Type = SBIC
	1	2	3	4	5	6	7
Investment Term	0.046*	0.051**	0.047*	0.033	0.048*	0.042	0.048*
	[0.026]	[0.026]	[0.026]	[0.027]	[0.026]	[0.026]	[0.026]
Yrs Since Last Inv	0.020***	0.021***	0.021***	0.018***	0.020***	0.020***	0.021***
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
Port Size/Mgr	0.044***	0.050***	0.045***	0.048***	0.043***	0.051***	0.045***
	[0.013]	[0.013]	[0.013]	[0.013]	[0.013]	[0.013]	[0.013]
Prefer to Originate	−0.009	−0.009	−0.009	−0.009	−0.009	−0.009	−0.009
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
Previous IPOs	−0.433***	−0.460***	−0.418***	−0.420***	−0.439***	−0.432***	−0.420***
	[0.126]	[0.126]	[0.127]	[0.126]	[0.127]	[0.126]	[0.126]
Expertise	−0.002	0.001	−0.001	0.002	0.001	0.001	−0.001
	[0.012]	[0.012]	[0.012]	[0.012]	[0.012]	[0.012]	[0.012]
Industry M/B	0.020	0.019	0.012	0.012	0.007	0.013	0.011
	[0.026]	[0.025]	[0.026]	[0.025]	[0.026]	[0.026]	[0.026]
No Deals	0.268**	0.264**	0.274**	0.261*	0.268**	0.269**	0.272**
	[0.134]	[0.133]	[0.134]	[0.134]	[0.134]	[0.134]	[0.134]
S&P 500 Return	−0.477**	−0.443**	−0.468**	−0.467**	−0.476**	−0.467**	−0.471**
	[0.187]	[0.186]	[0.188]	[0.187]	[0.187]	[0.187]	[0.188]
Bubble	−0.109	−0.108	−0.114	−0.102	−0.106	−0.109	−0.111
	[0.110]	[0.109]	[0.110]	[0.110]	[0.110]	[0.110]	[0.110]

Firm Type	−0.364* [0.213]	0.849*** [0.141]	−0.052 [0.188]	0.529*** [0.196]	−0.207* [0.126]	−0.108 [0.072]	−0.103 [0.328]
Observations	2,523	2,523	2,523	2,523	2,523	2,523	2,523
R–squared	0.033	0.046	0.032	0.035	0.033	0.033	0.032

Panel B: Median

	Firm Type = Fund of Funds	Firm Type = Corporate VC	Firm Type = Affiliate	Firm Type = Commercial Bank Affiliate	Firm Type = Investment Bank	Firm Type = Private Equity Firm	Firm Type = SBIC
	1	2	3	4	5	6	7
Investment Term	0.032 [0.025]	0.037 [0.025]	0.033 [0.025]	0.033 [0.025]	0.030 [0.025]	0.034 [0.025]	0.034 [0.025]
Yrs Since Last Inv	0.026*** [0.007]	0.026*** [0.007]	0.026*** [0.007]	0.026*** [0.007]	0.025*** [0.007]	0.026*** [0.007]	0.026*** [0.007]
Port Size/Mgr	0.025** [0.011]	0.026** [0.011]	0.025** [0.011]	0.026** [0.011]	0.024** [0.011]	0.026** [0.011]	0.026** [0.011]
Prefer to Originate	0.001 [0.005]	0.001 [0.005]	0.001 [0.005]	0.001 [0.005]	0.001 [0.005]	0.001 [0.005]	0.001 [0.005]
Previous IPOs	−0.025 [0.116]	−0.025 [0.116]	−0.017 [0.116]	−0.017 [0.116]	−0.080 [0.118]	−0.021 [0.116]	−0.019 [0.116]
Expertise	−0.005 [0.013]	−0.004 [0.013]	−0.004 [0.013]	−0.004 [0.013]	−0.003 [0.013]	−0.004 [0.013]	−0.004 [0.013]
Industry M/B	0.013 [0.025]	0.010 [0.025]	0.008 [0.025]	0.010 [0.025]	0.002 [0.025]	0.009 [0.025]	0.009 [0.025]
No Deals	0.301** [0.136]	0.306** [0.136]	0.308** [0.136]	0.302** [0.136]	0.301** [0.136]	0.300** [0.136]	0.301** [0.136]

(*continued*)

Table 14.9 (continued)

Panel B: Median

	Firm Type = Fund of Funds	Firm Type = Corporate VC	Firm Type = Affiliate	Firm Type = Commercial Bank Affiliate	Firm Type = Investment Bank	Firm Type = Private Equity Firm	Firm Type = SBIC
S&P 500 Return	−0.328*	−0.317*	−0.321*	−0.322*	−0.332*	−0.326*	−0.333*
	[0.190]	[0.190]	[0.190]	[0.190]	[0.190]	[0.190]	[0.190]
Bubble	−0.207*	−0.212*	−0.212*	−0.206*	−0.201*	−0.206*	−0.204*
	[0.110]	[0.110]	[0.110]	[0.110]	[0.110]	[0.110]	[0.110]
Firm Type	−0.196	0.161	−0.190	0.253	−0.333***	−0.018	−0.304
	[0.214]	[0.142]	[0.204]	[0.213]	[0.120]	[0.043]	[0.312]
Observations	2,532	2,532	2,532	2,532	2,532	2,532	2,532
R−squared	0.021	0.022	0.021	0.022	0.024	0.021	0.021

Notes: The following multinomial logit regression is used: $\mathrm{Re}\,t_j = \Psi(\alpha + \beta_0 Inv_i + \beta_1 X_i + \beta_2 I_j + \beta_3 Y + \beta_4\, FirmType_i)$. Inv is a vector of investment characteristics such as Investment Term, Years Since Last Inv, and Portfolio Size/Mgr. Investment Term is the natural log of the difference of date of last investment and date of first investment. Years Since Last Inv is 2006 minus the year that VC^i made its last investment in PC^j. Portfolio Size/Mgr is the number of invested PCs in VC fund scaled by the number of managers. X is a vector of venture capitalist characteristics including Prefer to Originate, Previous IPOs, Expertise, and Risk. Prefer to Originate describes the VCs preferred role in a syndication. Previous IPOs is the number of previous IPOs for which VC^j is responsible. Expertise is the number of funds the venture capitalist has raised before time t. Risk is an index from 0 to 2 that sums IT Dummy and Early-Stage Dummy, indicators of whether VC^i invests in the IT and/or Early-Stage PCs, respectively. I is the industry market-to-book ratio for the industry to which the PC belongs. Y is a vector of macroeconomic variables including Number of Deals and S&P 500 Return. Number of Deals is the natural log of the number of deals (investments) in the VC industry at time t. S&P 500 Return is the annual percentage return on the S&P 500 for the year that the VC last invested in the PC. Firm Type variables (column 1) are dummy variables that take on a value of 1 if they are the firm type listed and 0 otherwise. Marginal effects are reported, and robust standard errors (clustered around PC) are given in parentheses. *, **, *** indicate significance levels of 10, 5, and 1%, respectively.
Source: VentureXpert.

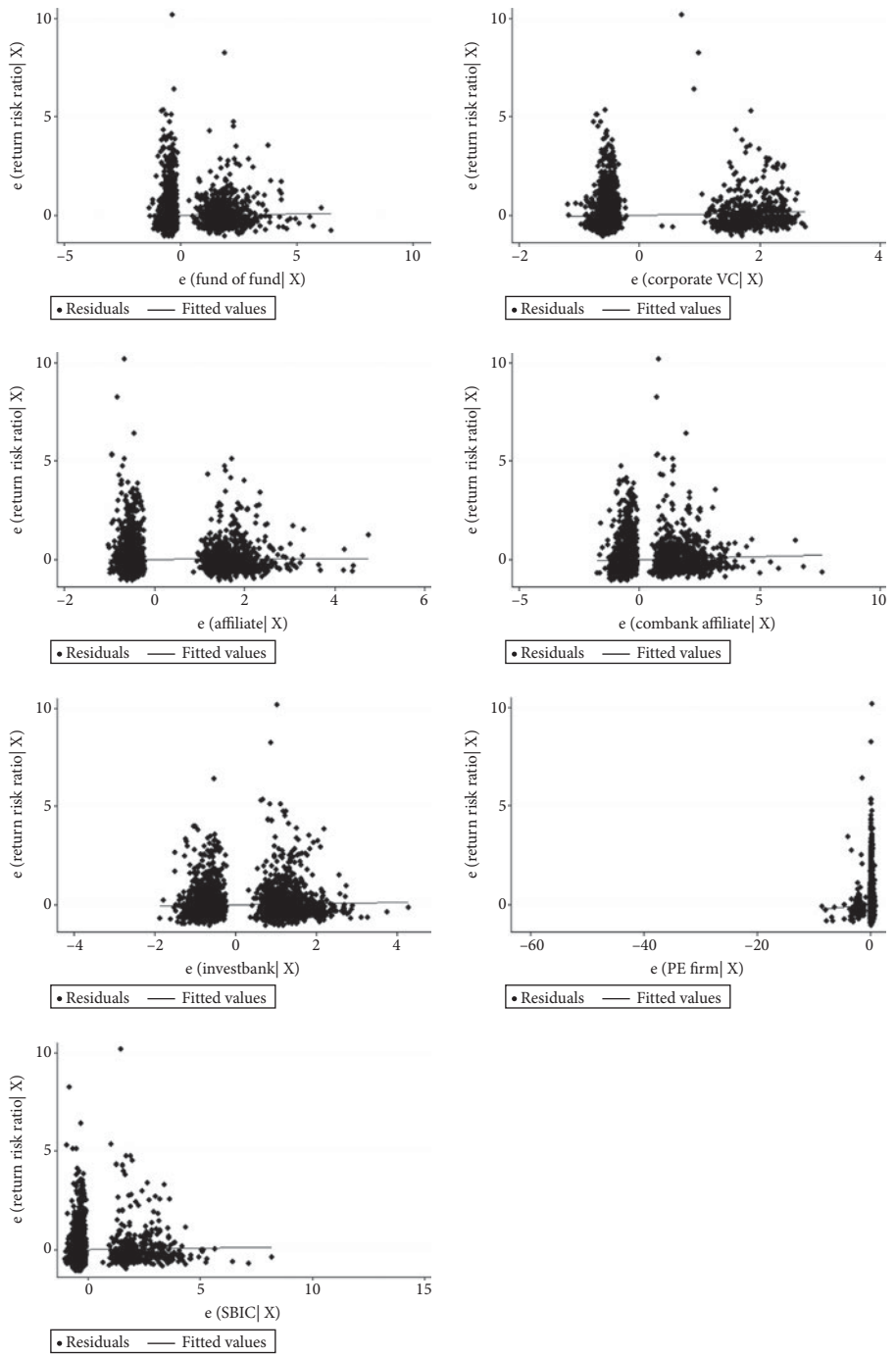

Figure 14.2 Return risk ratio by firm type.
These figures are based on the specifications in Table 14.9 and represent the partial scatter plots of the regression plane in PC Outcome/Firm Type space. Residuals are collected from equation (3) and labeled e(PC RRR | X). Each of the Firm Types is individually regressed on all of the control variables listed in equation (3). Residuals are collected and labeled e(Firm Type | X). The graph represents e(PC RRR | X) plotted against e(Firm Type | X).
Source: VentureXpert.

and very illiquid (i.e., investors often have to wait a long time before realizing any return, and secondary investment is not always an alternative). Funds-of-funds managers can and should be judged by the return-risk trade-off they impose on their investors. This paper does exactly that.

Results suggest that funds-of-funds managers do not perform significantly better on a risk-adjusted basis than their peers. Given the fact that investors have to pay an additional fee to these managers above and beyond that for the primary fund manager, there does not exist clear evidence that funds-of-funds managers are earning their fees. One of the best performing firm types in this analysis (even controlling for nonrandomness in the decision to exit) is investment banks. At least anecdotally, this may suggest that institutions should consider using these types of investment facilitators and skip the diversification outsourcing. These results may be of interest to institutional investors, private equity fund managers, and perspective funds-of-funds managers.

Notes

1. There are also funds of funds outside of the area of private equity: hedge funds, for example.
2. http://www.altassets.com/pdfs/piper_jaffray2004.pdf.
3. 2007 Fund of Funds Review (http://www.freepatentsonline.com/article/Journal-Academy-Business-Economics/192587640.html).
4. According to Asia Private Equity Review (APER), funds of funds are becoming increasingly popular in Asia (http://www.altassets.net/private-equity-knowledge-bank/private-equity-sector-focus/fund-of-funds-/article/nz5730.html).
5. http://www.altassets.com/pdfs/piper_jaffray2004.pdf.
6. http://www.sec.gov/divisions/investment/guidance/fundfundfaq.htm.
7. http://blogs.wsj.com/privateequity/2010/04/13/blackstone-fund-opts-for-more-lp-friendly-fee-structure/?mod=rss_WSJBlog.
8. http://www.efinancialnews.com/story/2003–11-03/funds-of-funds-feel-the-backlash-against-fees .
9. PC outcome = private is the base outcome.
10. Since observations are based on the term of investment in the portfolio companies and the current status, clustering around time cannot be done.
11. Venture capitalists are a subset of private equity investors.

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CHAPTER 15

FUND SIZE, LIMITED ATTENTION, AND PRIVATE EQUITY VALUATION

DOUGLAS CUMMING AND NA DAI

> We all had too much money. It was just too easy. . . . The problem . . . was that the funds had grown so big that the 2 percent became just as important as the 20 percent. . . . Success had less to do with performance or risk management . . . and more to do with bulking up.
>
> —Confession by a private equity manager, quoted in *New York Times*, September 22, 2009

Valuation is important to both venture capitalists and private equity investors (hereafter collectively referred to as PEs) and entrepreneurs, and thus often a contentious negotiation point in private equity contracting (Hsu, 2004; Engel and Keilbach, 2006; Hochberg et al., 2010, Gompers et al., 2010). For PEs, their ultimate return is positively associated with the difference between exit proceeds at a liquidity event (e.g., initial public offering [IPO] or mergers and acquisitions [M&A]) and the price they paid to invest in portfolio companies. For entrepreneurs, the

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valuation they receive at a financing round determines how much ownership stake they have to give up for a certain amount of capital infusion, which directly impacts the control structure of the portfolio company. Surprisingly there is a dearth of empirical work on the determinants of valuations in the private equity industry, despite its importance. Furthermore earlier studies typically focus on the impact of entrepreneurs' (entrepreneurial firms') characteristics and market condition on PE valuations (e.g., Gompers and Lerner, 2000; Hsu, 2007; Keienburg and Sievers, 2009). Unlike previous literature, this paper examines how characteristics of PE funds, particularly fund size, impact the pricing in the private equity industry.

The typical compensation package for PEs consists of a management fee, which is a fixed percentage (typically 2 percent) of the fund's capital, and "carried interest," which is a fixed percentage (often 20 percent) of profits as investment returns are realized. When the funds grow larger, the former becomes as important as the latter, which provides PEs with incentives to bulk up the fund, while the excess fees are seldom used to "invest in resources to grow the skill base of their funds."[1] Thus the typical private equity fund has seen an increase in capital managed per partner as fund size grew (see Gompers and Lerner, 2000; Metrick, 2006). This raises the following questions: When the PEs manage larger amounts of capital, are they able to provide the similar quantity and quality of services to their investee company? If there is a decline in the quantity or quality or both of their services, how are the valuations of their investee firms as well as their ultimate performance impacted? This paper also explores these questions.

We empirically examine several hypotheses regarding the relation between PE characteristics (PE reputation, fund size, and limited attention) and valuations in the PE industry, using a sample of more than 9,000 financing rounds with valuation data between 1991 and 2006 provided by the VentureXpert database. We project that the most reputable PEs are likely to pay a lower price, ceteris paribus. Larger PE funds are likely to pay a lower price as they have greater outside option. On the other hand, when funds become big, the agency problem may kick in, which predicts a convex (U-shape) relationship between fund size and pre-money valuation. Further, if human capital does not keep up with the fund growth, the resulting diluted attention could reduce either the fund's outside option or continuation option, thus leading to a higher or lower pre-money valuation.

Following Gompers and Lerner (2000), we adopt a hedonic regression approach.[2] A hedonic price function describes the equilibrium relationship between characteristics of a product or service and its price. We start with ordinary least squares (OLS) regressions of pre-money valuations of portfolio companies on PE reputation, fund size and its square term, and measures of limited attention, controlling for various characteristics of portfolio companies, such as the entrepreneurial firm's size, its stage of development, industry, and location, and the market conditions, including the capital commitment and number of IPOs during the previous calendar year. We show that the most reputable PEs pay a lower price for portfolio companies of similar quality. Further, we show a convex relationship between fund size and valuations of portfolio companies. We also find a significantly positive association between limited attention and valuation. When we include fund size and its square

term together with measures of limited attention as the righthand variables, the significance of fund size square term disappears, with the exception of the group of less reputable PEs. These findings suggest that fund size is in general positively associated with PEs' negotiation power, which allows them to get lower prices for their investments. However, when a fund becomes unnecessarily large, the diluted attention due to human capital constraints kicks in and reduces PEs' outside option, which increases the price of investments or pre-money valuation. For the less reputable PEs, who often have weaker inside governance mechanisms, the agency problem may also play a role in paying too much for certain investments.

The major challenge to our empirical design is that the VentureXpert data do not provide detailed company-level data that influence valuation, such as the company's accounting performance data (sales, assets, earnings, etc), the characteristics of the management team, or the strength of their intellectual property. Leaving out these potential value drivers could introduce a serious omitted variable problem in our OLS models. To remove, at least partially, the effect of unobserved company-specific factors, we conducted the following diagnostic analysis. First, following Hochberg et al. (2010), we exploit the panel structure of the round data by utilizing a company-level random-effects panel regression. Second, we group PEs into quartiles based on their past performance and rerun the basic models within each quartile. Sørensen (2007) shows that higher-quality portfolio companies are often matched with more reputable PEs. Thus the heterogeneity in company quality should be reduced within investments financed by PEs with similar reputation. Our results are robust to both approaches.

The second part of our paper examines the performance implication of fund size and limited attention. We find a concave (inverse U-shape) relationship between fund size and the probability of successful exits, which is particularly strong when the pre-money valuations of portfolio companies are high. Our findings suggest that the concave relationship between PE performance and its size, as shown in Kaplan and Schoar (2005), is to some extent because larger funds are more likely to overpay portfolio companies holding their quality constant.

This paper makes contributions to several strands of literature in private equity. Valuation is important to both PEs and entrepreneurs. However, there is a dearth of work on how valuation is determined in the private equity investments, with a few exceptions. Gompers and Lerner (2000) show that private equity valuation is impacted by market conditions. Hsu (2007) find that various characteristics of founders are important determinants of private equity valuation. One significant difference between private equity valuation and public equity valuation is that the value of the firm is, to a large extent, determined through the negotiation between capital providers and entrepreneurs, given the lack of an efficient pricing mechanism (a liquid trading market) in the PE market. Not only portfolio company quality and market conditions, but also many factors associated with PEs, such as their reputation, size, and services available, are expected to change the relative bargaining power of PEs and entrepreneurs in the negotiation. For the first time, as far as we know, our paper presents empirical evidence in this regard. By examining how various characteristics of PEs impact their negotiation power and

thus valuations in addition to portfolio company quality and market conditions, we are able to provide a more complete picture of how PE deals are priced.

A large number of academic papers address the issue of whether and why scale economies and diseconomies exist among financial intermediations (e.g., Berger and Humphrey, 1997; Chen et al., 2004; Pollet and Wilson, 2008). Less attention has been paid to the size effect in the PE and private equity literature. Kanniainen and Keuschnigg (2003, 2004), Keuschnigg (2004), Fulghieri and Sevilir (2005), Cumming (2006), Knill (2009), and others explore the determinants of optimal portfolio size (the number of portfolio companies) both theoretically and empirically. Goldfarb et al. (2007) show that PEs' belief and their limited ability could result in overinvestments or overentry and thus not be able to deliver a return that is desired by investors. Metrick and Yasuda (2010) consider a series of new questions regarding the economics of private equity funds, some of which are related to whether fund managers can successfully earn higher revenue by, among other things, raising larger funds. Other work examines the relation between fund size and performance (internal rate of return [IRR]), such as Kaplan and Schoar (2005), who document a concave relation (see also Ljungqvist and Richardson, 2006; Cumming, 2008; Lopez-de-Silanes et al., 2010). In this paper we examine whether PE fund size directly affects valuations of portfolio companies at each financing round, controlling for various characteristics of portfolio companies and market conditions. We conjecture that there will be increasing constraints from the available quantity and quality of human capital when fund size grows if the former does not keep up. Our investigation on the impact of the human capital constraints on valuation as well as the exit performance of portfolio companies allows us to provide insights on the existence of scale economy and diseconomy (and why) in the private equity industry from an innovative perspective.

The remainder of the paper is organized as follows. First we discuss the theoretical motivations for our study, then we describe the data and report the summary statistics. After that we examine the relations between fund size, limited attention, and valuations with a variety of specifications and diagnostic analyses, and then the relations between fund size, limited attention, and portfolio company performance. In the final section we discuss the implications of our findings.

Theoretical Considerations

What is the effect of fund size on PE valuations? One possible answer is that it has no effect. A fund of $500 million will invest in the same way as a fund of $10 million under management. However, PE valuations are very different from public equity valuations in that the value of the portfolio company is, to a large extent,

determined through the negotiation between capital providers and entrepreneurs. In addition to portfolio company quality and market conditions, as discussed in Gompers and Lerner (2000) and Hsu (2007), the negotiation power of both sides, PEs and entrepreneurs, certainly plays an important role in determining the price of the investment. On the PE side, several factors could potentially change their bargaining power, which nevertheless are generally neglected in the existing studies on PE valuation. In the section that follows, we discuss the potential impact of PE reputation, fund size, and limited attention on PEs' bargaining power and thus the valuation of portfolio company, as well as their ultimate performance.

Hsu (2004) shows that entrepreneurs are often willing to accept less attractive financial terms for the affiliation with reputable PEs, potentially due to their high-quality value-adding activities. Given the scarcity of reputable PEs and the expected benefits associated with reputation, we expect that more reputable PEs have greater bargaining power when it comes to negotiating the valuation of the portfolio companies. Thus we predict the following relation between PE reputation and portfolio company pre-money valuation:

H1: The most reputable PEs offer lower pre-money valuation given the equal quality of portfolio companies.

As shown in Kaplan and Schoar (2005), PE fund size is dependent on the fund's performance track record, which is connected to PEs' general reputation. In addition to this "quality" element, an advantage of large funds is that they have deep pockets. Thus entrepreneurs can possibly raise larger rounds of financing from these funds. Furthermore there is likely lower financing risk when entrepreneurs seek follow-on funding. These features are in general attractive to portfolio companies, particularly capital-intensive ones. In addition, larger PE funds would have greater outside option. These all increase large PEs' bargaining power and potentially reduce the price of investments. Thus we project a negative correlation between pre-money valuations and PE fund size even after controlling for PE reputation and the quality of portfolio companies:

H2: PE fund size is negatively correlated with pre-money valuation controlling for PE reputation and the quality of portfolio companies.

In corporate finance Jensen's (1986) free-cash-flow hypothesis argues that managers, in their own self-interest, seek to accumulate perquisites, and as a firm becomes larger, more opportunities exist for managers to indulge their desires for pecuniary and nonpecuniary benefits. Unless properly controlled, such behavior can lead to managers making inefficient expenditures by taking on negative net present value (NPV) investments and engaging in unprofitable takeovers as they attempt to "grow" the firm.

For similar reasons, we propose that some fund managers ("bad" managers) seek large fund commitments to pursue their pecuniary (e.g., greater fixed fee) and nonpecuniary (e.g., power and prestige) benefits, while some fund managers ("good" managers) voluntarily stay small to keep the fund size efficient. For the

former, when fund size is unnecessarily large, we expect fund managers to engage in some inefficient investment behaviors. For example, they may pursue larger but not necessarily highest NPV investments; they may pay more (offer higher valuation) to their portfolio companies. Therefore we expect that when funds get unnecessarily large, PEs offer higher valuation, everything else being equal:

H3: There is a convex relation between fund size and pre-money valuation.

Another potential effect associated with the growth of fund size is the limited attention, which Kahneman (1973) defines thus: An individual's attention spent on one task must reduce her attention available for other tasks due to humans' limited ability to process information and to perform multiple tasks simultaneously. If human capital does not grow at the same pace with fund size, PEs could be overstretched, and their time and attention allocated to their portfolio companies thus would be reduced. Limited attention may impact the pre-money valuation in two different directions. For instance, it may reduce PEs' continuation payoff, which indicates a lower price of the investment or lower pre-money valuation. On the other hand, limited attention could potentially reduce PEs' outside option given the human capital constraint, which reduces PEs' bargaining power and thus indicates a higher pre-money valuation. Hence we predict the following:

H4a: Limited attention is negatively correlated with pre-money valuation if its impact on PEs' continuation payoff is dominant.

H4b: Limited attention is positively correlated with pre-money valuation if its impact on PEs' outside option is dominant.

Kaplan and Schoar (2005) show that there is a concave relation between fund size and PEs' performance (IRR), suggesting that there is a diseconomy of scale in the PE industry. The agency issue and limited attention concern associated with fund size, as discussed, also have some implications for the ultimate performance of PEs' portfolio companies. For instance, if some fund managers ("bad" managers) seek large fund commitments to pursue their pecuniary desires (e.g., greater fixed fee) and engage in inefficient investment behavior (e.g., they may pursue larger but not necessarily highest NPV investments; they may pay more—offer higher valuation—to their portfolio companies), we expect a concave relation between fund size and portfolio companies' exit performance:

H5: There is a concave relation between fund size and portfolio companies' exit performance (e.g., probability of successful exits).

Kanniainen and Keuschnigg (2003, 2004), and Keuschnigg (2004) provide theoretical models showing that PEs value added is significantly reduced due to diluted attention. The empirical evidence provided in Cumming and Walz (2010), Cumming (2008), and Lopez-de-Silanes et al. (2010) support this notion. Presumably the lower the PE value added, the poorer performance the portfolio company will have. Thus we expect that limited attention is negatively associated with portfolio companies' performance:

H6: PEs' limited attention has a negative impact on the portfolio companies' ultimate performance (e.g., probability of successful exits).

The Data Set and Summary Statistics

The data on private equity investments, including the valuation data, come from the VentureXpert database provided by Thomason Financial Corporation. We start from all PE investments in the United States from 1991 to 2006. Then we exclude PE investments by PE investors other than PE firms investing their own capital.[3] To be included in the sample, the observation should also have the amount invested in each round, the size (commitment) of the lead PE fund, and the zip codes of the lead PE investor and the portfolio company.[4] The lead PE investor should have a greater than 10 percent investment in a specific round of financing to be included in the sample.[5] This leaves us with 27,754 rounds of PE investments. Of these, 9,266 observations (34.4 percent of the sample) have the post-money valuation data. The data are defined in Table 15.1 and summary statistics are in Table 15.2.[6]

Table 15.3 provides pre-money valuations based on venture characteristics and PE fund size.[7] Most of the results are consistent with Gompers and Lerner (2000).

Table 15.1 Definition of Variables

Variable	Definition
Ln (Fund Size)	Natural logarithm of fund size expressed in millions of 2006 dollars.
Ln(Fund Size/N of Partners): Comparable PEs Median Adjusted	Ln (Fund Size/N of Partners)—the median of Ln (Fund Size/N of Partners) of PEs with IPO market share falling into the same quartile.
Ln [Fund Size/(N of Partners/N of Parallel Funds)]: Comparable PEs Median Adjusted	Ln [Fund Size/(N of Partners/N of Parallel Funds)]—the median of Ln[Fund Size/(N of Partners/N of Parallel Funds)] of PEs with IPO market share falling into the same quartile.
PE IPO Share	Following Nahata (2008), for each PE firm, we cumulate the *dollar market value* of all companies taken public by the PE firm since 1987 until a given calendar year (before a specific round) and normalize it by the aggregate market value of all PE-backed companies that went public until the same calendar year.
Seed/Start-up Stage	A dummy variable that is set to equal to 1 if the portfolio company was at the seed or start-up stage, 0 otherwise.

(*continued*)

Table 15.1 (continued)

Variable	Definition
Early Stage	A dummy variable that is set to equal to 1 if the portfolio company was at the early stage, 0 otherwise.
Expansion Stage	A dummy variable that is set to equal to 1 if the portfolio company was at the expansion stage, 0 otherwise.
Computer-Related	A dummy variable that is set to equal to 1 if the portfolio company is in the computer-related industry, 0 otherwise.
Communication	A dummy variable that is set to equal to 1 if the portfolio company is in the communication/media industry, 0 otherwise.
Medical/Health/Life Science	A dummy variable that is set to equal to 1 if the portfolio company is in the medical/health/life science industry, 0 otherwise.
Biotechnology	A dummy variable that is set to equal to 1 if the portfolio company is in the biotechnology industry, 0 otherwise.
Semiconductor	A dummy variable that is set to equal to 1 if the portfolio company is in the semiconductor industry, 0 otherwise.
CA	A dummy variable that is set to equal to 1 if the portfolio company is located in California, 0 otherwise.
MA	A dummy variable that is set to equal to 1 if the portfolio company is located in Massachusetts, 0 otherwise.
TX	A dummy variable that is set to equal to 1 if the portfolio company is located in Texas, 0 otherwise.
NY	A dummy variable that is set to equal to 1 if the portfolio company is located in New York, 0 otherwise.
Follow-on Funds	A dummy variable that is set to equal to 1 if the fund is a follow-on fund, 0 otherwise.
Ln (PE flow last year)	Natural logarithm of fund commitment to the PE industry in the previous year.
Ln (IPOs last year)	Natural logarithm of number of IPOs in the previous year.
Syndicate	A dummy variable that is set to equal to 1 if more than one PEs invested in the same round, 0 otherwise.
Ln (Investment)	Natural logarithm of round size expressed in millions of 2006 dollars.
Ln (Distance)	Natural logarithm of the geographic distance between the lead PE and the entrepreneurial firm.

For example, valuations increase when the portfolio companies are at their later stages of development; portfolio companies located in California, Massachusetts, Texas, and New York have higher valuations than those located elsewhere. The pre-money valuations of portfolio companies also vary depending on the industry. For instance, the pre-money valuation of portfolio companies in the telecommunication/

Table 15.2 Number of Observations, by Year

Year	Number of Financing Rounds	Rounds with Valuation Data	Percentage with Valuation Data (%)
1991	1,136	78	6.9
1992	1,302	265	20.4
1993	1,058	230	21.7
1994	1,111	312	28.1
1995	1,014	343	33.8
1996	1,328	429	32.3
1997	1,497	535	35.7
1998	1,581	755	47.8
1999	2,457	1,296	52.7
2000	3,571	1,966	55.1
2001	2,314	1,137	49.1
2002	1,726	615	35.6
2003	1,684	494	29.3
2004	1,800	351	19.5
2005	1,987	250	12.6
2006	2,188	210	9.6
All Years	27,754	9,266	33.4

Note: The table shows the number of PE financings of new ventures in the VentureXpert database, as well as the number and percentage with valuation data.

Table 15.3 Pre-money Valuations of Financing Rounds

	Pre-money Valuation ($M)		
	Mean	Median	N
Round Size ($M)			
Highest Quartile	103.8	60.6	2316
Second Quartile	36.1	22.2	2317
Third Quartile	23.9	13.1	2315
Lowest Quartile	18.8	7.8	2318
Industry			
Computer-Related	42.2	18.7	4032

(*continued*)

Table 15.3 (continued)

	Pre-money Valuation ($M)		
	Mean	**Median**	**N**
Communication	68.4	25.9	1771
Medical/Health/Life Science	30.8	18.2	1395
Biotechnology	40.0	19.2	790
Semiconductor	46.9	20.5	623
Nontech	42.3	17.7	655
Stage			
Start-up/Seed	11.2	6.0	1013
Early Stage	20.2	10.7	2549
Expansion	55.4	29.4	3843
Later Stage	75.0	40.8	1502
Other	102.8	38.5	359
Location			
CA	47.1	21.1	3649
MA	47.7	20.2	1091
TX	59.1	20.4	500
NY	57.2	24.1	305
Elsewhere	40.3	18.0	3421
PE Fund Size ($M)			
Highest Quartile	74.1	34.2	2311
Second Quartile	45.4	22.7	2293
Third Quartile	33.1	17.1	2344
Lowest Quartile	30.1	12.8	2318

Notes: The sample consists of 9,266 rounds of PE investments between 1991 and 2006 in the VentureXpert database for which VentureXpert was able to determine the valuation of the financing round. The pre-money valuation is defined as the product of the price paid per share in the financing round and the shares outstanding prior to the financing round, expressed in millions of 2006 dollars.

media industry is about twice that of companies in the medical/health/life science industry. Table 15.3 also shows that the pre-money valuation increases with the size of the financing round. The mean (median) pre-money valuation of the largest quartile of financing rounds is $103.8 ($60.6) million, in 2006 dollars. In comparison, the mean (median) valuation of the smallest quartile of financing rounds is $18.8 ($7.8) million, in 2006 dollars.

In Table 15.3 we also find that the pre-money valuation of portfolio companies increases with fund size. We divide the sample PE funds into quartiles based on the fund size adjusted to millions of 2006 dollars. The pre-money valuation of companies invested by PE funds in the largest quartile has a mean (median) pre-money valuation of $74.1 ($34.2) million, while the mean (median) pre-money valuation of companies invested by PE funds in the smallest quartile is $30.1 ($12.8) million.

Fund Size, Limited Attention, and Valuation

In this section we start by developing measures of limited attention, then we explore the relationship between fund size, limited attention, and valuation with multivariate regressions controlling for various characteristics of portfolio companies and market conditions. We then report on whether our results are robust to various diagnostic analysis.

Measures of Limited Attention

As fund size increases, if PEs use the additional resources to add more human capital with as-good quality, there will be no overstretching problem. To measure limited attention, we first calculate the amount of fund managed by each partner. While we are able to obtain the number of partners at the PE firm level for 6,572 financing rounds, we cannot tell based on the current data how partners are assigned to each fund when a PE firm is operating more than one fund. To adjust the potential impact of the latter, we scale the amount of fund by both the number of parallel funds run by the same PE firm in a specific year and the number of partners at the firm level.

Kaplan and Schoar (2005) show that fund size and the past performance of PE firms are positively correlated, although the correlation is concave. Furthermore PE firms with better performance presumably are able to attract better talent. In other words, their managers arguably are capable of managing larger funds. It is thus critical to control for this endogeneity while measuring limited attention. To measure the performance-adjusted amount of excess capital managed per partner, we first group PE firms into quartiles based on their previous IPO market share. Then we compare the amount of capital managed per partner of a specific PE firm to the median measures of their peers with similar past performance (same quartile based on their previous IPO market share). The differences are our final measures of limited attention.[8]

OLS Regression Analysis

To examine whether and how PE reputation, fund size, and limited attention influence pre-money valuation, following Gompers and Lerner (2000) we use a hedonic regression approach. The dependent variable is the natural logarithm of pre-money valuations. The independent variables of our key interest are fund size, the square term of fund size, our two measures of limited attention (as discussed earlier), PE past performance, which is measured as the cumulative IPO market share of the PE firm, and the square term of PE past IPO market share.[9] Other independent variables include dummy variables capturing the stage of portfolio companies (seed/start-up, early stage, and expansion stage), dummies that indicate the industry of portfolio companies (computer-related, communication, medical/health/life science, biotechnology, and semiconductor), and dummies indicating the location of portfolio companies (California, Massachusetts, Texas, and New York). In addition, we include two measures of market conditions: the natural logarithm of fund flows to the PE industry in the previous year and the natural logarithm of the number of IPOs in the previous year. We also include a dummy variable capturing whether the fund is a follow-on fund and the natural logarithm of investment size. Pre-money valuation, fund size, fund flow, and investment data are all adjusted to 2006 dollars. Year dummies are also included in all specifications.

On the relationship between portfolio company characteristics and valuation, our results (in all five models, as shown in Table 15.4) are in general consistent with Gompers and Lerner (2000). For instance, companies in maturity stages and companies located in areas such as Massachusetts and New York on average have higher valuations. Companies in the medical/health/life science industry often have lower valuations. The pre-money valuation is significantly and positively associated with investment size. The lagged fund flow has a significantly positive effect on PE valuations. Further, follow-on funds in general offer lower price than first-time funds.

In addition, all specifications in Table 15.4 show that the relationship between pre-money valuation and PE past IPO market share is positive, albeit concave. This finding suggests that more reputable PEs (of better past performance) are often matched with higher quality companies that typically are of higher value; nevertheless the most reputable PEs offer lower prices, holding the quality of portfolio companies constant, supporting hypothesis 1. This finding is consistent with the notion proposed in Hsu (2004) that entrepreneurs are willing to accept less favorable financial terms to be affiliated with more reputable PEs.

We find a convex relationship between private firm valuation and PE fund size. The negative correlation between fund size and firm pre-money valuation indicates that larger PEs, in general, have greater negotiation power and thus pay lower prices, holding the quality of portfolio companies constant, consistent with hypothesis 2. However, this relationship is reversed when the fund gets very large, as suggested by the positive correlation between fund size square term and valuation.

In models 2 and 3, we link limited attention to firm valuation. We find a significantly positive association between firm valuation and both measures of limited attention. For instance, a coefficient of 0.171 (p-value = 0.003) on

Table 15.4 Regression Analysis: The Effect of Fund Size and Limited Attention on Valuation

	DV: Ln (Pre-money Valuation)				
	(1)	(2)	(3)	(4)	(5)
Intercept	2.391*** (0.000)	2.076*** (0.000)	2.033*** (0.000)	2.398*** (0.000)	2.296*** (0.000)
Variables of Key Interest					
Ln (Fund Size)	−0.122*** (0.003)			−0.121** (0.035)	−0.096* (0.097)
Ln (Fund Size) Square Term	0.015*** (0.000)			0.009 (0.121)	0.007 (0.262)
Ln (Fund Size/N of Partners): Comparable PEs Median Adjusted		0.171*** (0.003)		0.176** (0.013)	
Ln [Fund Size/(N of Partners/N of Parallel Funds)]: Comparable PEs Median Adjusted			0.027*** (0.001)		0.028*** (0.004)
PE IPO Share	0.089*** (0.000)	0.101*** (0.000)	0.101*** (0.000)	0.113*** (0.000)	0.113*** (0.000)
PE IPO Share Square Term	−0.005** (0.014)	−0.006** (0.010)	−0.006** (0.011)	−0.007*** (0.004)	−0.007*** (0.004)
Characteristics of Firms Stage of Firm					
Seed/Start-up Stage	−1.432*** (0.000)	−1.466*** (0.000)	−1.473*** (0.000)	−1.462*** (0.000)	−1.469*** (0.000)
Early Stage	−1.093*** (0.000)	−1.120*** (0.000)	−1.114 (0.000)	−1.115*** (0.000)	−1.109*** (0.000)
Expansion Stage	−0.338*** (0.000)	−0.383*** (0.000)	−0.380*** (0.000)	−0.384*** (0.000)	−0.380*** (0.000)
Industry of Firm					
Computer-Related	−0.018 (0.753)	−0.107* (0.094)	−0.111* (0.086)	−0.101 (0.114)	−0.107* (0.099)
Communication	0.078 (0.212)	0.006 (0.929)	−0.003 (0.964)	0.002 (0.982)	0.003 (0.967)
Medical/Health/Life Science	−0.141** (0.028)	−0.257*** (0.000)	−0.257*** (0.000)	−0.250*** (0.000)	−0.251*** (0.000)

(*continued*)

Table 15.4 (continued)

	DV: Ln (Pre-money Valuation)				
	(1)	(2)	(3)	(4)	(5)
Biotechnology	−0.052	−0.133	−0.135	−0.126	−0.130
	(0.481)	(0.104)	(0.102)	(0.122)	(0.114)
Semiconductor	0.064	−0.027	−0.035	−0.023	−0.033
	(0.400)	(0.732)	(0.663)	(0.768)	(0.686)
Location of Firm					
CA	0.035	0.038	0.040	0.042	0.044
	(0.197)	(0.207)	(0.184)	(0.164)	(0.148)
MA	0.081**	0.088**	0.086**	0.093**	0.090**
	(0.039)	(0.036)	(0.042)	(0.027)	(0.034)
TX	0.111	0.113	0.112	0.118	0.117
	(0.119)	(0.126)	(0.132)	(0.109)	(0.115)
NY	0.180**	0.236**	0.230***	0.240**	0.235***
	(0.039)	(0.015)	(0.000)	(0.014)	(0.007)
Other Control Variables					
Follow-on Funds	−0.131***	−0.126***	−0.136***	−0.116***	−0.127***
	(0.000)	(0.001)	(0.000)	(0.002)	(0.001)
Ln (Investments)	0.438***	0.445***	0.443***	0.449***	0.448***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln (PE flow last year)	0.019	0.028	0.045*	0.036	0.053**
	(0.376)	(0.234)	(0.062)	(0.135)	(0.030)
Ln (IPOs last year)	0.045	0.059	0.034	0.045	0.020
	(0.233)	(0.141)	(0.402)	(0.264)	(0.630)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
N	9266	6572	6572	6572	6572
Adjusted R^2(%)	47.52	48.15	48.32	48.22	48.38

Notes: The first regression consists of 9,266 rounds of PE investments between 1991 and 2006 in the VentureXpert database for which VentureXpert was able to determine the valuation of the financing round. Models 2–5 use the sample with data on the number of partners at th`e PE firm level available, which consists of 6,572 rounds of PE investments between 1991 and 2006. The dependent variable is the natural logarithm of pre-money valuations. The pre-money valuation is defined as the product of the price paid per share in the financing round and the shares outstanding prior to the financing round, expressed in millions of 2006 dollars. The definition of independent variables is available in Table 15.1. The p-values are based on standard errors clustered at the company level. ***, **, and * represent significance at 1%, 5%, and 10% confidence level, respectively.

excess fund managed per partner, or Ln (Fund Size/N of Partners) adjusted by the median of the same measure of PEs with similar past performance, indicates that 1 standard deviation increase in excess capital managed per partner increases the valuation of the firm by 4.2 percent, assuming other aspects are similar. This set of findings is consistent with the prediction of hypothesis 4b,

implying that diluted attention when a fund grows very large could reduce PEs' outside option and thus decrease their bargaining power, which significantly increases the price of the investments.

To further examine whether the U-shape relation between fund size and valuation (as shown in model 1) is driven by the agency issue or limited attention, in models 4 and 5 we include fund size, its square term, and measures of limited attention. We show that the square term of fund size remains positive but becomes insignificant. The coefficients of the two measures of limited attention, on the other hand, remain significantly positive. Thus our results are more consistent with the limited attention argument.

In summary, several interesting results emerge from Table 15.4. First, we show that the most reputable PEs pay a lower price for the investment, ceteris paribus, consistent with hypothesis 1. Second, we find a significantly negative correlation between fund size and valuation, but a significantly positive correlation between the square term of fund size and valuation. The former implies that larger funds, in general, have greater bargaining power, supporting hypothesis 2. The significance of the square term disappears when we control for limited attention. Third, there is a significantly positive correlation between limited attention and valuation. This finding indicates that limited attention reduces PEs' outside option and thus leads to a higher price of investment, supporting hypothesis 4b.

Robustness Checks

Alternative Models

As discussed in previous works (Gompers and Lerner, 2000; Hochberg et al., 2010), the VentureXpert valuation data have at least two shortcomings that could lead to spurious results. First, VentureXpert does not provide detailed company-level data that influence valuation, such as the company's accounting performance data (sales, assets, earnings, etc), the characteristics of the management team, or the value of their intellectual property. Leaving out these potential value drivers could introduce serious omitted variable problem in our OLS models presented in Table 15.4. To address this concern, we follow the approach used in Hochberg et al. (2010) and exploit the panel structure of the data (companies receive multiple financing rounds) to remove, at least partially, the effect of unobserved company-specific factors. Specifically we use a company-level random-effects regression model estimated using maximum likelihood. The coefficients of our key interest are reported in Panel A of Table 15.5. The likelihood ratio tests strongly reject the null hypothesis that the company-level effect is zero, and the coefficients of our interest are slightly smaller than in Table 15.4; nevertheless we continue to find a convex relationship between private firm valuation and fund size, and significantly positive associations between firm valuation and measures of limited attention. When we include fund size together with measures of limited attention, similar to the results in Table 15.4, we again find limited attention remains significantly positive, while the significance of fund size square term disappears.

The second shortcoming is that valuation data are self-reported, and a substantial portion of the financing rounds in the VentureXpert database does not disclose valuation data. In unreported analysis we compare and contrast rounds with valuation data and those without valuation data, and show that there are some systemic differences between these two groups. To make sure that these omissions of valuation data do not introduce systematic biases in our analysis, we use the Heckman sample selection approach to address this concern. Specifically we estimate a first-stage probit regression where the dependent variable is a dummy indicating whether the valuation of a financing round is disclosed, and independent variables include the entrepreneurial firm's development stage (seed/start-up, early stage, and expansion stage), dummies indicating the industry of the firm and its geographic location, round size, whether more than one PE firm participated in the investment, and year fixed effects. The inverse Mills ratio is estimated off the first-stage regression and included as an additional independent variable in the specifications, as presented in Table 15.4. As shown in Panel B of Table 15.5 (to save space, we report only the coefficients of interest and the inverse Mills ratio), the significant loadings on the inverse Mills ratio suggest that there is systematic bias due to the missing valuation data. However, our main results carry through with this alternative approach.

In Panel C of Table 15.5 we simultaneously correct for the missing valuation data issue and address the concern of the unobserved company-level heterogeneity. We continue to find similar results.

Address the Unobserved Company Quality Issue by Controlling for PE Reputation

As shown in Sørensen (2007), better portfolio companies are matched with better PE firms. This suggests that companies financed by PEs of similar reputation are of smaller heterogeneity in their overall quality. As a further effort to address the absence of company-level value driving factors in our data, we divide our sample into quartiles based on the PE's previous IPO market share, then we repeat our specifications as shown in Table 15.4 within each quartile.[10]

Quartile 1 in Table 15.6 represents financing rounds invested by the most reputable PEs, and quartile 4 represents those financed by the least reputable PEs. Among the financing rounds invested by the most reputable PEs, we do not find that fund size significantly impacts valuation. In contrast, among rounds invested by less reputable PEs (e.g., quartiles 2, 3, and 4), we continue to find a convex relationship between fund size and firm valuation. Kaplan and Shoar (2005) document that high-quality PEs are able to raise larger funds; however, the top-performing PEs do not grow as much proportionally as average-performing PEs. Our results to some extent mirror their finding. We also observe a more significant negative

Table 15.5 Alternative Models: The Effect of Fund Size and Limited Attention on Valuation

Panel A: Company Random-Effects Model					
Variables of Key Interest					
Ln (Fund Size)	−0.104*** (0.008)			−0.102* (0.062)	−0.079 (0.160)
Ln (Fund Size) Square Term	0.013*** (0.001)			0.008 (0.172)	0.005 (0.345)
Fund Size/N of Partners: Comparable PEs Median Adjusted		0131** (0.013)		0.135** (0.43)	
Fund Size/(N of Partners/N of Parallel Funds): Comparable PEs Median Adjusted			0.021*** (0.005)		0.023** (0.020)
PE IPO Share	0.095*** (0.000)	0.108*** (0.000)	0.106*** (0.000)	0.117*** (0.000)	0.116*** (0.000)
PE IPO Share Square Term	−0.007** (0.002)	−0.007*** (0.001)	−0.007*** (0.001)	−0.008*** (0.000)	−0.008*** (0.001)
LR Test Chi2	5181.29	4245.80	4209.22	4251.94	4213.83
Prob>Chi2	0.000	0.000	0.000	0.000	0.000
Panel B: Heckman Selection Model					
Variables of Key Interest					
Ln (Fund Size)	−0.105*** (0.005)			−0.114** (0.034)	−0.090 (0.103)
Ln (Fund Size) Square Term	0.012*** (0.002)			0.008 (0.159)	0.005 (0.343)
Fund Size/N of Partners: Comparable PEs Median Adjusted		0.123** (0.012)		0.143** (0.025)	
Fund Size/(N of Partners/N of Parallel Funds): Comparable PEs Median Adjusted			0.020*** (0.005)		0.023** (0.011)
PE IPO Share	0.097*** (0.000)	0.102*** (0.000)	0.102*** (0.000)	0.117*** (0.000)	0.118*** (0.000)
PE IPO Share Square Term	−0.006*** (0.003)	−0.006*** (0.003)	−0.006*** (0.003)	−0.007*** (0.001)	−0.007*** (0.001)

(*continued*)

Table 15.5 (continued)

Inverse Mills Ratio	1.019*** (0.000)	0.751*** (0.000)	0.768*** (0.000)	0.758*** (0.000)	0.778*** (0.000)
Wald Chi2	4700.22	4356.48	4329.07	4360.58	4327.35
Prob>Chi2	0.000	0.000	0.000	0.000	0.000
Panel C. Heckman-Correct Company Random-Effect Model					
Variables of Key Interest					
Ln (Fund Size)	−0.094** (0.016)			−0.099* (0.069)	−0.076 (0.172)
Ln (Fund Size) Square Term	0.011*** (0.004)			0.007 (0.206)	0.005 (0.401)
Fund Size/N of Partners: Comparable PEs Median Adjusted		0.091* (0.087)		0.103 (0.125)	
Fund Size/(N of Partners/N of Parallel Funds): Comparable PEs Median Adjusted			0.016** (0.040)		0.018* (0.059)
PE IPO Share	0.100*** (0.000)	0.108*** (0.000)	0.107*** (0.000)	0.119*** (0.000)	0.1119*** (0.000)
PE IPO Share Square Term	−0.007*** (0.001)	−0.007*** (0.001)	−0.007*** (0.001)	−0.008*** (0.000)	−0.008*** (0.000)
Inverse Mills Ratio	2.489*** (0.000)	1.995*** (0.000)	1.966*** (0.000)	2.018*** (0.000)	2.001*** (0.000)
LR Test Chi2	5229.25	4270.45	4233.06	4277.16	4238.43
Prob>Chi2	0.000	0.000	0.000	0.000	0.000

Notes: In Panel A we use panel data linear regression with random effect at the company level to control for the unobserved company-level valuation drivers. In Panel B we apply the Heckman selection model to correct the missing valuation data problem. Panel C combines the selection correction of Panel B with the panel data regressions with random effect of Panel A. To save space, we report only the coefficient estimates of interest; the coefficient estimates for the controls mirror those shown in Table 15.4. ***, **, and * represent significance at 1%, 5%, and 10% confidence level, respectively.

correlation between fund size and valuation for less reputable PEs, indicating that fund size is a relatively more important factor in negotiation for less reputable PEs. In other words, between two PEs, both without much of a track record, the larger one is expected to have more negotiation power.

We continue to find a positive correlation between firm valuation and limited attention in all four quartiles. This positive correlation is particularly strong in financing rounds invested by less reputable PEs (quartiles 3 and 4). When we include fund size together with measures of limited attention, none is significant

Table 15.6 The Effect of Fund Size and Limited Attention on Valuation among PEs with Similar Performance

Quartile 1 (Most Reputable PEs)					
Variables of Key Interest					
Ln (Fund Size)	−0.024 (0.865)			0.117 (0.587)	0.113 (0.600)
Ln (Fund Size) Square Term	0.010 (0.422)			−0.002 (0.911)	−0.002 (0.930)
Fund Size/N of Partners: Comparable PEs Median Adjusted		0.165* (0.065)		0.047 (0.697)	
Fund Size/(N of Partners/N of Parallel Funds): Comparable PEs Median Adjusted			0.023* (0.085)		0.006 (0.739)
N	2188	2006	2006	2006	2006
Adjusted R2	31.56	33.59	33.57	33.90	33.89
Quartile 2					
Variables of Key Interest					
Ln (Fund Size)	−0.070 (0.624)			−0.231 (0.140)	−0.207 (0.217)
Ln (Fund Size) Square Term	0.023* (0.068)			0.033** (0.035)	0.030* (0.079)
Fund Size/N of Partners: Comparable PEs Median Adjusted		0.108 (0.127)		−0.193* (0.094)	
Fund Size/(N of Partners/N of Parallel Funds): Comparable PEs Median Adjusted			0.019** (0.046)		−0.018 (0.278)
N	1970	1617	1617	1617	1617
Adjusted R2	36.88	31.91	31.96	32.44	32.38
Quartile 3					
Variables of Key Interest					
Ln (Fund Size)	−0.389*** (0.008)			−0.503*** (0.001)	−0.506*** (0.001)
Ln (Fund Size) Square Term	0.061*** (0.000)			0.072*** (0.000)	0.072*** (0.000)

(*coontinued*)

Table 15.6 (continued)

Fund Size/N of Partners: Comparable PEs Median Adjusted		1.220** (0.018)		−0.137 (0.818)	
Fund Size/(N of Partners/N of Parallel Funds): Comparable PEs Median Adjusted			0.258* (0.058)		−0.058 (0.698)
N	1948	1529	1529	1529	1529
Adjusted R2	31.59	32.64	32.54	33.78	33.79
Quartile 4 (Least Reputable PEs)					
Variables of Key Interest					
Ln (Fund Size)	−0.130* (0.071)			−0.251** (0.018)	−0.254** (0.017)
Ln (Fund Size) Square Term	0.037*** (0.000)			0.044*** (0.001)	0.047*** (0.000)
Fund Size/N of Partners: Comparable PEs Median Adjusted		3.528*** (0.000)		1.808** (0.013)	
Fund Size/(N of Partners/N of Parallel Funds): Comparable PEs Median Adjusted			0.940*** (0.000)		0.290 (0.237)
N	2333	1574	1574	1574	1574
Adjusted R2	27.96	28.96	28.44	29.33	29.74

Notes: As a further effort to control for the unobserved company valuation drivers, we group the financing rounds based on the lead PE's previous IPO market share. Specifically we divide the lead PEs into quartiles based on their previous IPO market share. Then we rerun the regressions as shown in Table 15.4 for financing rounds invested by PEs with IPO market share falling into the same quartile. Presumably companies invested by PEs with similar reputation will have smaller heterogeneity in terms of entrepreneurial firm quality. To save space, we report only the coefficient estimates of interest; the coefficient estimates for the controls mirror those shown in Table 15.4. The lead PE's IPO share and its square term are not included in this set of regressions. The p-values are based on standard errors clustered at the company level. ***, **, and * represent significance at 1%, 5%, and 10% confidence level, respectively.

for the group of most reputable PEs (quartile 1). In contrast, for the group of least reputable PEs (quartile 4), we find a convex relationship between fund size and valuation and a positive relation between limited attention and valuation, both significant. These findings suggest that for funds with mediocre performance, both the agency problem and limited attention associated with fund size are more likely to kick in. One consequence is that these funds pay higher prices for investments with similar quality.

This analysis suggests that our results are robust after controlling for the endogenous relationship between fund size and PE previous performance as well as the endogenous matching between reputable PEs and high-quality companies. An additional insight from this analysis is that the best-performing PEs are not subject to the constraints of human capital as strongly as average-performing PE. One reason could be that, as Kaplan and Shoar (2005) suggest, the most reputable PEs do not grow their fund as much as average-performing ones to avoid the potential diseconomy of scale.

In unreported analysis we also examine whether our results are specific to different time periods, the stage of portfolio companies, the age of the PE fund (first five years versus later periods), and the location of the PE fund, among many other factors. We continue to find robust results. These results are available upon request.

In summary, we show that there exists a convex relationship between fund size and private firm valuation, controlling for the reputation of the PE firm and various characteristics of the portfolio companies as well as market conditions. We further show that limited attention significantly increases firm valuation. When we include both fund size and measure of limited attention as righthand variables, the convex relation between fund size and valuation becomes insignificant, while the coefficients of limited attention remain significantly positive. These results are robust to alternative models with better control for unobserved company-level value-driving factors and missing valuation data. Our empirical findings thus suggest that some overlarge funds and funds with human capital constraints (which lead to diluted attention) may be paying too much to their investee companies. We further show that the best-performing PEs are less subject to this problem than the average-performing ones, as the former voluntarily withhold growth to avoid the diseconomy of scale, as suggested in Kaplan and Schoar (2005).

Fund Size, Limited Attention, and Portfolio Company Performance

In this section we analyze the performance implications of fund size and limited attention by examining whether they influence the probability of successful exits. We include only financing rounds before 2003. If the portfolio company had exited through IPO or acquisition by the end of 2007, we define it as being successful.

Table 15.7 reports the results of probit regressions of the probability of successful exits on fund size and limited attention, controlling for other factors that might have an influence on exits. Our variables of interest include fund size, the square term of fund size, and our measures of limited attention, as discussed in the previous section. Control variables include characteristics of portfolio companies, such as dummy variables capturing the stage (seed/start-up, early stage, and expansion

Table 15.7 Fund Size, Limited Attention, and Portfolio Company Performance

	DV: Probability of Successful Exit				
	(1)	(2)	(3)	(4)	(5)
Intercept	−1.104***	−0.984***	−0.978***	−1.082***	−1.054***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Variables of Key Interest					
Ln (Fund Size)	0.086			0.078	0.063
	(0.124)			(0.336)	(0.442)
Ln (Fund Size) Square Term	−0.010*			−0.011	−0.009
	(0.069)			(0.187)	(0.285)
Ln (Fund Size/N of Partners): Comparable PEs Median Adjusted		−0.024		0.096	
		(0.759)		(0.350)	
Ln[Fund Size/(N of Partners/N of Parallel Funds)]: Comparable PEs Median Adjusted			−0.007		0.007
			(0.551)		(0.629)
PE IPO Share	0.029***	0.018**	0.018**	0.028***	0.027**
	(0.002)	(0.036)	(0.035)	(0.008)	(0.011)
Characteristics of Firms Stage of Firm					
Seed/Start-up Stage	−0.123**	−0.154**	−0.153**	−0.146**	−0.147**
	(0.041)	(0.022)	(0.022)	(0.030)	(0.029)
Early Stage	−0.129***	−0.179***	−0.178***	−0.173***	−0.173***
	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)
Expansion Stage	−0.019	−0.054	−0.053	−0.052	−0.052
	(0.667)	(0.271)	(0.274)	(0.286)	(0.288)
Industry of Firm					
Computer-Related	0.376***	0.390***	0.387***	0.388***	0.386***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Communication	0.306***	0.343***	0.340***	0.342***	0.339***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Medical/Health/Life Science	0.399***	0.452***	0.450***	0.450***	0.448***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Biotechnology	0.394***	0.480***	0.478***	0.479***	0.476***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Semiconductor	0.402***	0.464***	0.461***	0.466***	0.463***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Location of Firm					
CA	0.117***	0.142***	0.142***	0.141***	0.142***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

MA	0.166***	0.156***	0.156***	0.157***	0.156***
	(0.001)	(0.006)	(0.006)	(0.006)	(0.006)
TX	−0.067	−0.016	−0.016	−0.008	−0.009
	(0.351)	(0.840)	(0.847)	(0.920)	(0.907)
NY	−0.108	−0.165	−0.165	−0.162	−0.162
	(0.241)	(0.119)	(0.121)	(0.127)	(0.28)
Other Control Variables					
Syndicate Dummy	0.028	0.040	0.037	0.034	0.031
	(0.648)	(0.558)	(0.588)	(0.620)	(0.655)
Log (Investment)	0.091***	0.095***	0.095***	0.102***	0.102***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
N	7070	5608	5608	5608	5608
Pseudo R^2(%)	2.39	2.68	2.68	2.72	2.71

Notes: In this table we examine whether fund size and limited attention impact the probability of successful exit. We include only financing rounds before 2003. If the portfolio company had exited through IPO or acquisition by the end of 2007, we define it as being successful. ***, **, and * represent significance at 1%, 5%, and 10% confidence level, respectively.

stage), dummies that indicate the industry of portfolio companies (computer-related, communication, medical/health/life science, biotechnology, and semiconductor), and dummies indicating the location of portfolio companies (California, Massachusetts, Texas, and New York). On the PE side, we include PE IPO share as a control for its reputation. We also include a Syndicate dummy, which is set equal to 1 if more than one PE participated the same round, and 0 otherwise. In addition, we include year dummies in all specifications.

Consistent with previous literature, we show that more reputable PEs (higher IPO share) positively contribute to the success of portfolio companies. Technology companies overall and companies located in California and Massachusetts are more likely to exit through IPOs or M&As. We find that fund size is positively associated with the probability of successful exit, while its square term is negatively associated with the probability of successful exit. Both coefficients nevertheless are only marginally significant (at the 15 and 10 percent confidence levels, respectively). We don't find that limited attention is significantly associated with the probability of successful exits, thus rejecting hypothesis 6.

To further examine how fund size, limited attention, and valuation jointly impact portfolio companies' ultimate performance, in Table 15.8 we group our sample into quartiles based on the pre-money valuation and repeat the regressions as shown in Table 15.7 for each quartile.[11] We show that the influence of fund size on the probability of successful exits is particularly strong among the group with relatively high pre-money valuation (quartiles 1 and 2). Together with our findings in the earlier empirical sections, this finding suggests that one of the mechanisms for the

Table 15.8 The Relation between Fund Size, Limited Attention, and Exit Performance by Pre-Money Valuation Quartiles

	DV: Probability of Successful Exits				
	Quartile 1 (Highest Valuation)				
Ln (Fund Size)	0.195*			0.183	0.176
	(0.098)			(0.289)	(0.311)
Ln (Fund Size) Square Term	−0.023**			−0.026	−0.025
	(0.038)			(0.123)	(0.141)
Ln (Fund Size/N of Partners): Comparable PEs Median Adjusted		−0.057		0.243	
		(0.636)		(0.170)	
Ln [Fund Size/(N of Partners/N of Parallel Funds)]: Comparable PEs Median Adjusted			−0.007		0.029
			(0.649)		(0.207)
N	1813	1428	1428	1428	1428
Adjusted R^2	2.91	3.74	3.74	4.72	4.02
	Quartile 2				
Ln (Fund Size)	0.259**			0.244*	0.229
	(0.026)			(0.097)	(0.122)
Ln (Fund Size) Square Term	−0.026**			−0.023	−0.021
	(0.023)			(0.132)	(0.171)
Ln (Fund Size/N of Partners): Comparable PEs Median Adjusted		−0.113		−0.011	
		(0.459)		(0.956)	
Ln [Fund Size/(N of Partners/N of Parallel Funds)]: Comparable PEs Median Adjusted			−0.021		−0.008
			(0.340)		(0.765)
N	1777	1427	1427	1427	1427
Pseudo R^2	3.66	4.12	4.14	4.27	4.27
	Quartile 3				
Ln (Fund Size)	−0.010			0.024	0.030
	(0.927)			(0.887)	(0.859)
Ln (Fund Size) Square Term	0.002			−0.003	−0.004
	(0.866)			(0.873)	(0.842)
Ln (Fund Size/N of Partners): Comparable PEs Median Adjusted		0.026		0.046	
		(0.891)		(0.840)	

Ln [Fund Size/(N of Partners/N of Parallel Funds)]: Comparable PEs Median Adjusted			0.006 (0.836)		0.010 (0.776)
N	1757	1399	1399	1399	1399
Adjusted R^2	2.56	3.12	3.12	3.12	3.12
			Quartile 4 (Lowest Valuation)		
Ln (Fund Size)	−0.166 (0.163)			−0.276 (0.137)	−0.342* (0.067)
Ln (Fund Size) Square Term	0.018 (0.186)			0.027 (0.183)	0.036* (0.076)
Ln (Fund Size/N of Partners): Comparable PEs Median Adjusted		0.223 (0.398)		0.134 (0.665)	
Ln [Fund Size/(N of Partners/N of Parallel Funds)]: Comparable PEs Median Adjusted			−0.004 (0.942)		−0.037 (0.510)
N	1723	1354	1354	1354	1354
Pseudo R^2	4.25	4.58	4.54	4.72	4.74

Notes: In this table we analyze whether the impact of fund size and limited attention on exit performance is particularly strong for the group with higher pre-money valuation. Specifically we divide the sample into quartiles based on the pre-money valuation. Then we rerun the regressions as shown in Table 15.7 for the observations with pre-money valuation falling into the same quartile. To save space, we report only the coefficient estimates of interest; the coefficient estimates for the controls mirror those shown in Table 15.7. ***, **, and * represent significance at 1%, 5%, and 10% confidence level, respectively.

diseconomy of size documented in the literature is the overpricing of entrepreneurial firms by large PE funds. We provide that first empirical evidence that such an agency problem exists in the private equity investments and that it has a negative impact on the performance of portfolio companies. Similar to the results in Table 15.7, we do not find limited attention has a significant association with company performance.

Conclusion

This paper examines the relations between various characteristics of PEs, such as their reputation, size, and limited attention, and valuations in the private equity industry. As far as we know, this paper presents the first empirical evidence of

how PEs' characteristics impact their bargaining power in negotiation and thus the price of their investments.

We show that the most reputable PEs pay lower price, ceteris paribus. Further, we find a convex relationship between fund size and firm valuation and a significantly positive correlation between limited attention and valuation. However, the positive correlation between fund size square term and valuation disappears when we control for limited attention, with the exception of the group of less reputable PEs. These findings suggest that, in general, fund size is positively correlated with negotiation power and thus reduces pre-money valuation. However, human capital is overstretched when funds grow larger, and the diluted attention reduces PEs' outside option, which weakens their negotiation power and thus increases pre-money valuation. At the same time the agency problem may also kick in, especially for the less reputable PEs, who presumably have weaker inside governance mechanisms. Our results are robust to a variety of diagnostic analyses, including but not limited to controlling for unobserved company-level value drivers, missing valuation data, and PEs' past performance.

We find a concave relationship between fund size and the probability of successful exits. We further show that the negative correlation between fund size square term and the probability of successful exit is particularly strong and significant when the pre-money valuation is high.

Our findings show that the price of private equity investments is not determined just by the quality of the portfolio companies or entrepreneurs, or the supply and demand of capital, but is also influenced by various characteristics of the PEs. There is a trade-off between being affiliated with the most reputable PEs and the valuation that portfolio companies can get, consistent with Hsu (2004). Large PE funds may provide entrepreneurs with larger investments and higher prices; however, as a trade-off the probability of successful exits is lower.

Our findings also suggest that there is scale diseconomy in the private equity industry, supporting the existing literature (e.g., Kaplan and Schoar, 2005; Ljungqvist and Richardson, 2006; Cumming, 2008). Further, we show that the scale diseconomy is at least partially due to constraints from human capital. PEs often do not increase human capital in proportion to the growth in fund size, which reduces PEs' outside options. Their bargaining power is thus reduced, and they pay a higher price for investments of similar quality.

Notes

1. Andrew Ross Sorkin, "A Financier Peels Back the Curtain," *New York Times*, September 22, 2009.
2. As Gompers and Lerner (2000) have argued, the typical gaps of one to two years between refinancings of PE-backed firms makes it incomplete and misleading to use a price index based purely on the changes in valuations between financings for the same company.

3. We do not include other types of PE investors, such as corporate PE, financial institution–affiliated PE funds, pension funds, and university foundations. The purpose is to avoid the potential impact of organizational forms of PE investors on valuations.
4. "Lead PE fund" is defined as the fund that has invested the largest amount of capital in a specific financing round.
5. This requirement ensures that the lead PE has a significant impact on the valuation in the financing round.
6. In unreported analysis we compare and contrast rounds with valuation data and those without valuation data, which shows that there are some systematic differences between these two groups. To make sure that these omissions of valuation data do not introduce systematic biases in our analysis, we use the Heckman sample selection approach to address this concern in Table 15.5.
7. VentureXpert provides only post-money valuation data of the financing round. Pre-money valuation is calculated as the difference between post-money valuation and the amount of capital invested in the financing round.
8. The previous version of the paper also includes two measures of limited attention that are not adjusted by peer performance. The regression results are in general similar.
9. Following Nahata (2008), for each PE firm, we cumulate the *dollar market value* of all companies taken public by the PE firm since 1987 until a given calendar year (before a specific round) and normalize it by the aggregate market value of all PE-backed companies that went public until the same calendar year.
10. We also tried quintiles and deciles. Our results are robust and available upon request.
11. We would like to thank an anonymous referee for this suggestion.

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CHAPTER 16

PRIVATE EQUITY INVESTORS, CORPORATE GOVERNANCE, AND PERFORMANCE OF IPO FIRMS

IGOR FILATOTCHEV

It is increasingly recognized in the management literature that the initial public offering (IPO) is an important stage in the life cycle of privately held and entrepreneurial firms. At this critical junction a firm has overcome the first challenges of its entrepreneurial phase and entered a growth stage. As Fama and French (2004, 229) emphasize, an IPO "is the point of entry that gives firms expanded access to equity capital, allowing them to emerge and grow." An IPO can provide an entrepreneurial firm with critical resources for its future expansion. It can also provide entrepreneurs with the first substantive access to cash from their investment of time and resources in the entrepreneurial effort.

Despite the growing awareness of the importance of IPOs among both academics and the investor community, the process by which a privately held firm

transforms itself into a publicly traded company is still not well understood. While numerous studies have investigated the determinants of the going-public decision (e.g., Booth and Smith, 1986; Jain and Kini, 1999) and postissue performance (e.g., Beatty and Ritter, 1986; Brav et al., 2000; Espenlaub and Tonks, 1998; Michaely and Shaw, 1994), there is relatively little research on the related but equally important issue of the factors that influence the corporate governance mechanism of a firm at IPO stage, and how the specific characteristics of this mechanism, such as ownership interests of private equity investors, may affect the IPO's performance.

Organizational theorists have increasingly drawn on agency theory (e.g., Beatty and Zajac, 1994; Brennan and Franks, 1997; Mikkelson et al., 1997) and upper-echelon research (e.g., Certo et al., 2001a; Hambrick and Mason, 1984; Higgins and Gulati, 2003) to generate a body of conceptual and empirical research that is focused on corporate governance problems of IPOs. A major underlying assumption of this research is that information asymmetry exists between the IPO's team, underwriters, and public market investors that may create agency costs and lead to a substantial reduction in IPO performance (for extensive discussions, see Certo et al., 2001b; Michaely and Shaw, 1994). For example, underpricing of the stock at the IPO, the difference between the initial price at which a firm's stock is offered and the closing price of the stock on the first day of trading, is a major concern to the entrepreneurial firm and to the entrepreneur since it represents value the market ultimately sees in the stock but which the firm or entrepreneur did not obtain when the stock was first offered for sale (Daily et al., 2003; Ibbotson et al., 1988).[1]

This chapter focuses on the complex interrelationships between private equity financiers, corporate governance, and performance of the IPO firm. Its first contribution is the exploration of agency conflicts, not as a unitary concept, as has been done in prior research, but instead as two distinctive types of agency problems (adverse selection and moral hazard). I analyze the effectiveness of firm-level signals associated with private equity ownership patterns with regard to each of these types of agency problems within entrepreneurial IPO firms. Second, in contrast with prior research, which tends to either treat outside investors such as private equity investors as a unitary group or to not define exactly who are included in such designations (i.e., Brav and Gompers, 2003), this chapter compares the governance roles of two types of IPO private equity investors: "formal" (venture capitalists) and "informal" (business angels) private equity investors. A third contribution is related to the discussion of the governance roles of venture capital syndicates since, as a rule, IPO firms have a number of private equity backers when they come to the stock market. Fourth, these ownership-performance relationships are discussed in different institutional contexts since the private equity industry has significant national variations that may affect the performance of IPO firms.

Information Asymmetries, Venture Capital Backing, and Performance of IPO Firms

Information asymmetries, or differences in information between the various parties to the listing process, including the IPO firm, banks and underwriters, the entrepreneur, and external investors, has been the foundation of prior investigations of underpricing (Ritter and Welch, 2002). Bruton et al (2009) show that information asymmetry leads to two distinctive types of agency problems: adverse selection and moral hazard. In the case of adverse selection agency conflict, a manager may not accurately reveal all he knows about a firm. As Ritter and Welch (2002, 1807) argue, "After all, small investors cannot take a tour of the firm and its secret inventions." Specifically, at IPO this may take the form of overly optimistic estimates of the firm's revenues by one of these parties. These overly optimistic estimates can increase the expected value of the firm, which in turn increases the rewards from the IPO and are a type of adverse selection agency conflict. Moral hazard problems emerge when information asymmetries make it possible for managers to shirk their duties and not act at maximum efficiency and effectiveness for the firm. As a result of these information asymmetries, there are potential agency costs when a firm experiences an IPO since managers may not reveal actions within the firm or do not take certain actions that maximize benefits to the firm (Sanders and Boivie, 2004).

At IPO investors recognize the potential impact of the agency costs associated with information asymmetries. Investors will therefore anticipate potential agency costs and price-protect themselves, thus leading to an IPO discount. Prior research approximates this discount by lower industry-adjusted offer price/book or price/sales ratios (e.g., Chahine and Filatotchev, 2008), while others associate it with greater underpricing measured by the difference between the first-day-trading closing price and the offer price (e.g., Daily et al., 2003), suggesting that the after-market price provides a good proxy for an intrinsic value of the IPO firm. Some researchers, however, argue that the uncertainties and information asymmetries cannot be resolved on the first day of trading, and suggest using longer-term proxies for the stock market discount (Aggarwal and Rivoli, 1990; Loughran et al., 1994).

However, the IPO team may use corporate governance–related signals that allow potential investors to better understand the true value of the firm and the risks of agency problems, which in turn can improve the IPO firm's performance (Sanders and Boivie, 2004). As entrepreneurial firms gradually "professionalize," they increasingly look outside for financial recourses provided by various early-stage investors. Agency research and related "certification" framework (e.g., Barry

et al., 1990; Black and Gilson, 1998; Lerner, 1995) suggest that an entrepreneurial venture can signal its expected value by who has invested in the firm. Principal among early-stage investors are private equity investors; they are the second most important group of shareholders, after founders, in an entrepreneurial venture (Lerner, 1998). This is because successful investors' time and ability to invest in numerous new ventures is limited, so they will invest in those ventures they feel will be the most successful. Thus, from an agency perspective, private equity investors would be expected to be involved in those ventures they feel are going to be successful, and as a result their presence can certify to public investors the value of the IPO firm.

Private equity investors, however, are not homogeneous, but represent a diverse range of different types of investors, including venture capitalist (VC) firms, buyout firms, leveraged buyout (LBO) specialists, and "business angels." There are substantial differences in investment strategies and time horizons among these investors. For example, VCs, as a rule, specialize in investing in early-stage ventures such as entrepreneurial start-ups, whereas buyout firms and LBO experts are focused on management buyouts and LBOs. VCs firms are formed as partnerships, whereas business angels are wealthy individuals investing on their own behalf. The vast majority of IPO-related papers are focused on the "certification" role of VCs only; I will return to this issue later. This research places an emphasis on the roles of VC investors in the price discovery process at the time of an IPO, and argues that they may reduce the information asymmetry at the time of the issue, and their presence can have a value-enhancing effect (Lerner, 1995). Thus the presence of VC investors can mitigate the adverse selection problem in an entrepreneurial venture.

Depending on their retained ownership, early-stage investors may also have the incentive to be involved in the decision-making process and to exert a significant influence on management before and after flotation. Since seed and development funding normally causes dilution of initial founders' holdings, it can create a misalignment of incentives in issuing firms. The VC firms design their contracts to reduce this information asymmetry and maximize the disclosure of private knowledge by the entrepreneur-founder (Shane and Cable, 2002). The IPO is characterized by lock-up arrangements that make retained ownership by VCs relatively illiquid after the IPO; as result their retained concentrated ownership imposes a cost on them. Thus their retained ownership signals their belief in the value of the firm to minority investors (Brav and Gompers, 2003). Concentrated private ownership leads to a reduction of coordination costs related to multiple types of private and public equity investors in the IPO firm and creates a Jensen-Meckling–type incentive alignment effect that jointly may mitigate post-IPO risk of moral hazard (Jensen and Meckling, 1976). Therefore VC investors' ownership concentration may be a particularly important governance parameter that enhances IPO firm performance and reduces the negative effects of the "IPO discount" arising from agency conflicts identified above. Prior U.S. research suggests that VCs play a certification role at the time of IPOs. VCs act as third-party certifying agents reducing

initial underpricing (Lerner, 1995). Megginson and Weiss (1991) find lower initial returns for venture-backed IPOs.[2] Using a unique sample of private firms for which financial data are available in the years before and after their IPO, Katz (2009) differentiates between those that have private equity sponsorship (PE-backed firms) and those that do not (non-PE-backed firms). The findings indicate that PE-backed firms generally have higher earnings quality than those that do not have PE sponsorship, engage less in earnings management, and report more conservatively both before and after the IPO. While more reputable VCs initially select better quality firms, more reputable VCs continue to be associated with superior long-run performance, even after controlling for VC selectivity. The authors find that more reputable VCs exhibit more active post-IPO involvement in the corporate governance of their portfolio firms and that this continued VC involvement positively influences post-IPO firm performance. In the United Kingdom, Levis (2008) examines the aftermarket performance of private equity–backed initial public offerings (IPOs) based on a hand-collected sample of private equity–backed and equivalent samples of venture capital–backed and other nonsponsored issues on the London Stock Exchange. The evidence suggests that private equity–backed IPOs exhibit superior performance compared with their counterparts throughout the thirty-six-month period in the aftermarket; such performance is robust across different benchmarks and estimation procedures. However, Coakley and Hadass (2007) analyze the postissue operating performance of 316 venture-backed and 274 non-venture U.K. IPOs in 1985–2003. Cross-section regression results indicate support for venture capital certification in the nonbubble years, but a significantly negative relationship between operating performance and venture capitalist board representation during the bubble years. Finally, Hochberg et al. (2007) find that better networked VC firms experience significantly better fund performance, as measured by the proportion of investments that are successfully exited through an IPO or a sale to another company.

However, recent IPO literature suggests that potential conflicts of interest among pre-IPO investors may lead to higher underpricing. On the one hand, Gompers (1996) argues that less experienced VCs may grandstand, that is, take firms public earlier than more established firms, in order to raise their profile in the market and attract capital in future rounds. On the other hand, Loughran and Ritter (2004) propose a "corruption hypothesis"; they argue that some pre-IPO investors (e.g., VCs) may look to extract rents through deliberate underpricing in exchange for preferential share allocation in further underpriced IPOs. Within this framework Francis and Hasan (2001) and Lee and Wahal (2004) show that in recent years U.S. venture capital–backed IPOs experience larger first-day returns than comparable non-venture-backed IPOs. This suggests the existence of a potential conflict of interest between VC firms and the IPO firm. In addition, following Arthurs et al.'s (2008) "conflicting voices" argument, VCs have a dual identity as both principals and agents. These investors are often part of limited partnerships that put pressure on them to obtain fast results and to seek a timely realization of their investment. Hence VCs are relatively short-term investors who are

likely to be seeking at IPO to realize their gains from their value-adding activities for the venture (Arthurs et al., 2008) as well as to establish their reputation in order to raise further funds. These results are in line with findings in Chahine and Filatotchev (2008), who show that bank-affiliated VCs lead to poorer IPO performance in France.

Table 16.1 provides the main findings from the studies reviewed above. Bearing in mind a large number of publications on this topic in economics, finance, and management areas, it is impossible to include all studies that have been published over past thirty years. Instead I include some widely cited publications in this field covering a range of country samples, periods, and performance indicators of IPO firms. As this table clearly shows, previous research on the governance role of private equity investors in IPO firms has identified both value-enhancing and value-destroying effects associated with this type of owner. On the one hand, private equity investors carefully select their portfolio companies and provide them with financial and managerial support necessary to develop and grow a new venture. This leads to a strong certification effect that may reduce information asymmetries and associated adverse selection agency costs. On the other hand, a limited time horizon associated with lock-up arrangements and exit orientation may substantially undermine monitoring capacity and incentives of private equity investors, leading to an increase in moral hazard costs. This may explain the ambiguity of empirical findings that so far has failed to provide a consistent picture of the governance impacts of private equity investors on IPO firms.

The Governance Roles of "Business Angels"

The prior research addresses private equity investors as a group. But private equity can involve different types of investors. Specifically VCs and business angels are two central types of private equity investors who may both play a certification role in reducing information asymmetries and adverse selection costs associated with the IPO firm. Indeed firms using business angels' finance are expected to generate higher wealth as they benefit from their experience and skills. One of the principal differences is that the VC invests mainly for others and partly for herself, interests being aligned through the use of carried interest for VC executives and sometimes the scope for direct co-investment. In contrast, business angels invest solely for themselves. As a result of this different funding there is also a difference in agency risk (Fiet, 1995), which may lead to differences in the monitoring mechanisms adopted by VCs and angel investors (Prowse, 1998;

Table 16.1 Summary of Main Research Studies on Private Equity–Backed IPOs

Authors	Sample Description	Method of Analysis	Main Findings
Barry et al. (1990)	433 IPOs by VC-backed and 1,123 IPOs without VC backing companies in the U.S., 1978–1987	Chi-square tests; OLS regression analysis	The VCs have concentrated equity positions, maintain their investment beyond the IPO, and serve on the boards of their portfolio firms. VC involvement leads to reduction in underpricing.
Megginson and Weiss (1991)	A matched sample of 320 VC-backed and 320 non-VC-backed IPOs in the U.S., 1983–1987	T-tests; OLS regressions	VC backing lowers underpricing and gross spreads. VCs retain a significant proportion of their holdings after the IPO.
Jain and Kini (1995)	A matched sample of 136 VC-backed and 136 non-VC-backed IPOs in the U.S.	OLS regression analysis	VC-backed IPOs exhibit relatively superior postissue operating performance. VC-backed IPOs have higher valuations.
Gompers (1996)	433 IPOs in the U.S., 1988–1994	T-tests; OLS regression analysis	Companies backed by young VC firms are younger and more underpriced at their IPO than those of established VC firms. Young VC firms have been on the board of directors a shorter period of time at the IPO, hold smaller equity stakes, and time the IPO to precede or coincide with raising money for follow-on funds.
Brav and Gompers (2003)	2,794 IPOs in the U.S., 1988–1996	T-tests; OLS regressions	Underpricing is positively associated with VC backing, high-quality underwriters, and shorter lock-up periods
Lee and Wahal (2004)	6,413 IPOs in the U.S., 1980–2000	T-tests; a two-step estimation procedure with selection bias corrections and switching regressions	VC-backed IPOs experience larger first-day returns compared to non-VC-backed IPOs. This is particularly pronounced in the "bubble" period of 1999–2000.

(*continued*)

Table 16.1 (continued)

Authors	Sample Description	Method of Analysis	Main Findings
Jelic et al. (2005)	167 management buyouts (MBOs) exiting through IPOs on the London Stock Exchange, 1964 –1997	OLS regression analysis	No evidence of either significant underperformance or that VC-backed MBOs perform better than their non-VC-backed counterparts in the long run. However, MBOs backed by highly reputable VCs seem to be better long-term investments compared to those backed by less prestigious VCs.
Chahine and Filatotchev (2008)	230 companies that went public from 1996 to 2002 in the Nouveau Marché and Second Marché in France	OLS regression analysis	IPOs in which VCs are affiliated to lead underwriters have lower underpricing than both nonaffiliated VC-backed IPOs and non-VC-backed IPOs. Similarly affiliated VC-backed IPOs exhibit greater earnings surprise and better market performance at the end of the one-year period following the IPO date. IPOs with affiliated VCs in general, and to more prestigious underwriters in particular, have a higher long-term abnormal return than both nonaffiliated and non-VC-backed IPOs.
Arthurs et al. (2008)	307 IPOs in the U.S., 1990—1994	OLS regression analysis	Both monitoring by board insiders and board experience decrease underpricing. Furthermore underpricing increases when venture capitalists have prior ties with underwriters.
Bruton et al. (2010)	Matched sample of 122 IPOs in the U.K. and 122 in France, 1996–2002	Two-stage-OLS analysis; instrumental variable analysis	Controlling for the endogeneity of private equity investors' retained share ownership, the authors find support for the agency theory argument that concentrated ownership improves IPO's performance. VCs are associated with better IPO performance, but this effect is stronger in the U.K. Business angels are associated with better IPO performance in France.

Osnabrugge, 1998). Angels may be more selective regarding the entrepreneurs in whom they invest and engage in more active monitoring since it is their personal funds involved and they are less able to make use of formal contractual devices, unlike VCs (Fiet, 1995). Finally, angels may be less concerned about developing reputational capital since, unlike VCs, they do not need to seek external funding in subsequent rounds and hence are less likely to engage in grandstanding. However, the higher the post-IPO angels' ownership, the higher the expected loss for both business angels and issuing firms in case of false signaling. As a result of this difference there is also a difference in agency risk (Fiet, 1995), which may lead to differences in the monitoring mechanisms adopted by venture capitalists and business angels, with the latter being more active at monitoring (Prowse, 1998; Osnabrugge, 2000). In addition business angels are under less pressure to cash in their investment and exit the venture, and this extends their time horizon (Shane and Cable, 2002).

Considerably less is known about the role of business angels in IPO firms than about venture capitalists (Bruton et al., 2009). In large measure this is because they are wealthy, successful individuals, and there is limited reporting required from them about their activities. However, business angels are generally seen as investing because they trust the entrepreneur (Fiet, 1995). In addition, some studies suggest that business angels are patient investors (Sohl, 1999). The time pressures of either being in a limited partnership or working for a financial institution such as a bank places pressure on the venture capitalist to obtain fast results. But since they are investing for themselves business angels can be more patient for the firm to perform as desired. The fact that they invest for themselves also means that they do not have to exit the invested firm in the way a venture capitalist may need to since there are limits on the time a limited partnership can exist, whereas angels have no set time limits.

A number of studies investigate informal ties between business angels and entrepreneurs that may enhance their monitoring capacity (Bruton et al., 2009; Chahine et al, 2007). For example, business angels have a preference to invest in firms closer to them geographically than do venture capitalists (Sohl, 1999). The closer the funded firms are, the easier it will be for the business angel to monitor them. The business angels also are more likely to invest in those they know personally. The result of these direct social ties is that they provide a mechanism for business angels to obtain private information about the quality of entrepreneurs' talents and their tendency to behave opportunistically. These informal ties also generate obligations that mitigate the self-interested behavior of founders (Shane and Cable, 2002).

These arguments suggest that, although business angels and venture capitalists may provide similar, ex-ante certification signals, their ex-post monitoring capacities and incentives may differ. As a result, business angels' involvement in the venture at the time of IPO may be a more potent signal of superior monitoring that mitigates potential moral hazard costs of founders' opportunism (Bruton et al., 2009).

Syndication of Private Equity Investment in IPO Firms

In a syndication two or more venture capital firms come together to take an equity stake in an investment. The percentage of investments syndicated in the U.K. venture capital market rose in 1999 to 27 percent after having fallen for several years. This was followed by a sharp fall in 2000 and 2001 to about half this level, as venture capital firms moved away from the high-tech sector following the collapse of the dot-com boom. By 2002 the more uncertain investment environment appears to have been associated with a further sharp increase, with 26.5 percent of investments being syndicated (Filatotchev et al., 2006). Private equity firms typically undertake repeat syndication over time with a network of partners (Bygrave, 1987, 1988).

Each syndicate usually contains lead and nonlead firms, with an individual venture capital firm playing both roles over time, depending on the particular deal. Each syndicate is temporary in nature, with the financing structure constructed specifically for that transaction. This limited longevity of the syndicated investments may create moral hazard problems associated with the "principal-principal" relationship between syndicate members (Filatotchev et al., 2006).

Syndicated investments may be riskier than stand-alone ventures. A fully diversified portfolio is more difficult for private equity firms than for institutional investors who invest in listed stock because of the presence of large ex-ante asymmetric information in investment decisions (Reid, 1998; Sahlman, 1990; Lockett and Wright, 2001). Syndication thus may be undertaken as a means of risk sharing through portfolio diversification, as it permits private equity firms to invest in more portfolio companies than would otherwise be possible (Cumming, 2006b).

Venture capital syndicates involve the sharing of decision making among the syndicate members. The lower the level of cooperation among syndicate members, the greater the levels of relational risk and hence the associated agency costs. The origins of the agency costs in the syndicate may arise from the diverse objectives of members and the time-consuming nature of coordination. In VC deals with multiple rounds of financing, the lead investor may also have an informational advantage vis-à-vis other syndicate members where they enter in later rounds (Admati and Pfleiderer, 1994).

This complex relationship between multiple principals is defined as a "principal-principal" agency problem (Filatotchev et al., 2006), as opposed to the "principal-agent" problem between investor and investee. These agency problems can in principle be addressed in a number of ways. Shared equity ownership in private equity firms syndicates may bring benefits of higher levels of trust and knowledge acquisition (Beamish and Banks, 1987), as well as mutual forbearance and stability (Yan and Gray, 2001; Mjoen and Tallman, 1997) that provides an effective remedy

to situations where the lead syndicate member has access to more information than the nonlead members about the investee.

However, lead venture capital firms may seek a larger equity stake in return for their greater effort in monitoring the investee and coordinating the syndicate (Wright and Lockett, 2003). The investment agreement between the syndicate members may be important in specifying rights of access to information, board membership rights, and so on for nonlead syndicate members, but may be limited by the problems associated with the complexity of contracting.

It is in the interests of the lead venture capital firm not to mislead syndicate partners in sharing information because of the potentially damaging impact on reputation and lack of willingness to reciprocate future deals (Wright and Lockett, 2003). Repeated interaction can lead to high levels of trust as syndicate members come to know how partners will behave (Lockett and Wright, 1999). As venture capital industries are typically small, close-knit communities, this scope for building trust and reputation is enhanced (Black and Gilson, 1998).

Another way to reduce these principal-principal moral hazard problems is to use the IPO firm's governance system as a mechanism for arbitrage between the potentially diverse objectives of syndicate partners (Filatotchev and Bishop, 2002; Gompers, 1995). Where skilled lead venture capital firms are less reliant on other syndicate members for specialist information (Admati and Pfleiderer, 1994) and are more likely than nonleads to exert hands-on influence over investees (Wright and Lockett, 2003), the development of an independent board may be important in ensuring that the syndicate functions effectively. Nonlead syndicate members may seek the appointment of an independent nonexecutive chairman to perform the functions of an arbiter. Nonexecutive board membership may be increased through the presence of nonlead syndicate members to enhance transparency in decision making and thus cooperation (Wright and Lockett, 2003). Filatotchev et al. (2006) provide evidence that IPOs backed by syndicates of VCs are more likely to develop independent boards than are IPOs backed by single VCs.

In addition to these arguments, a resource-based perspective suggests that syndication can bring specialized resources for the ex-post management of investments. By syndicating deals, VC firms are able to increase the portfolio they can optimally manage through resource sharing (Kanniainen and Keuschnigg, 2003; Jääskeläinen et al., 2006). VC firms can access more information by syndicating with other reputable VC firms. However, in specialist areas VC firms may seek to syndicate with industrial partners. These industrial partners may have more specialist knowledge than either the VC firm itself or other VCs. This knowledge can be important in evaluating the initial investment, in postinvestment management, and in providing an eventual exit route.

As the investee develops, there may be a need to access further significant funds. The initial VC backer may have the specialist market–based skills but need to access further funds to diversify the risk associated with scaling up the operation. As VC funds are typically small (Reid, 1998), they may seek to

syndicate deals that are large relative to their fund size, which typically involves later-stage private equity funds (Lockett and Wright, 2001). VC syndicates may therefore also syndicate with private equity firms that specialize in later-stage ventures.

Again, these arguments emphasize the dual governance roles of private equity syndicates in IPO firms. By syndicating IPO deals, private equity investors may diversify their portfolios and undertake a substantial resource commitment to a firm. This may enhance the IPO firm's value and reduce agency costs associated with adverse selection problems, leading to a substantial improvement of performance. However, private equity syndicates may create their own set of agency problems associated with the diverse interests of partners and partner opportunism. This would make postissue monitoring less efficient and more problematic, leading to an increase in moral hazard agency costs.

Private Equity Investors and National Institutions

Prior research on VC-backed IPOs has tended to focus on the United States and has emphasized high monitoring by VCs, high VC expertise and board presence, lower founder involvement, predominance of independent VCs with limited time horizons (Barry et al., 1990; Lerner, 1995), and pressure to demonstrate exit track records in order to raise subsequent rounds of funds (Gompers, 1996; Lee and Wahal, 2004). Yet the U.S. VC market is quite distinct from its European counterpart, where earlier-stage VC and VC-backed IPOs are much less important, and where independent VCs and active monitoring are generally less prevalent (Sapienza et al., 1996).

A number of studies combining agency research with institutional theory have shown that differences in national institutions can impact the effectiveness of corporate governance on the firm level (Aguilera et al., 2008; Aguilera and Jackson, 2006; La Porta et al., 2000). For example, Prowse (1990) has identified differences in the agency conflicts between shareholders and debt holders in the United States and Japan. More generally, in common law societies investors are willing to take more risks and use "arm's-length" control mechanisms since they have legal remedies, such as the ability to sue in the courts if board members and managers do not act in their best interest and maximize firm profitability, whereas in civil law countries investors rely more heavily on network-based, "relationship" governance (Hoskisson, et al., 2004). Thus the impact of private equity investors may be different in civil law environments, where there are fewer legal remedies available compared to common law countries (Fiss and Zajac, 2004).

Prior research has tended to treat agency theory as a universal theory that will be applied exactly the same way in different institutional settings. However, it has been recognized in other disciplines that areas such as motivation and leadership differ in different institutional environments. More specifically it is reasonable to expect that the effectiveness of corporate governance parameters predicted by multiple agency theory may be affected by institutional factors. Bruton et al. (2009) develop theoretical arguments showing that IPO performance effects of the same governance parameters, such as ownership concentration and retained ownership by private equity investors, may differ depending on the legal system and institutional characteristics of the private equity industry in a specific country. Building on pioneering work within the law and economics field (e.g., La Porta et al., 1998, 2000), these researchers argue that the effectiveness of corporate governance mechanisms may differ from country to country and may be mediated by institutional characteristics of a particular economic system (Dharwakar et al., 2000; Douma et al., 2006; Hoskisson et al., 2004). In addition the ability to design investments and financial contracts may also be dependent on various elements of the institutional environment (Kaplan et al., 2004). Therefore the traditional agency framework may present only a partial view of the world, and organization research would benefit from merging agency and institutional theories (Douma et al., 2006). It follows, therefore, that the salience of agency problems discussed above and the effectiveness of corporate governance factors depend on national institutional environments.

Institutions can be conceptualized as providing the rules of the game in a society (North, 1990). They are subtle but pervasive factors that shape the goals and beliefs of individuals, groups, and organizations (North, 1990; Scott, 2002). Building on prior research by North (1990), DiMaggio and Powell (1991), and others, Scott (2002) categorized institutions into cognitive, normative, and regulatory groupings. There can be strong differences in areas that share similar cultural traits, such as within Europe or between nations in North America (Bruton et al., 2003, 2005). More specifically legal institutions can vary significantly even in different domains that share similar cultural traits and that are physically close to each other (Armour and Cumming, 2006; Wright et al., 2005). The roots of the differences in legal institutions emanate from the distinction between two major families of legal systems in the world: common law and civil law. Common law systems are primarily built on legal precedent established by judges as they resolve individual cases; those case opinions have the force of law and strongly influence future decisions. A number of different research domains have used institutional theory (Hoskisson et al., 2004), although its prior use in the arena of agency theory and corporate governance is limited (Aguilera and Jackson, 2003).

Research that has examined the impact of common law and civil law on business has shown significant differences in the voting rights attached to shares, protection of the shareholder voting mechanism against abuse by management, and remedial rights of minority shareholders in different nations (La Porta et al.,

1998, 2000). Different institutional environments relating to restrictions on the size of shareholdings by institutional investors can lead to differences in ownership concentration and the ability to become active investors (Prowse, 1990). Common law countries have the strongest legal protection of minority shareholders, while investor protection is weakest in French civil law countries (Hoskisson et al., 2004; Lerner and Schoar, 2005). Dharwadkar et al. (2000, 652) argue that, bearing in mind this diversity, "organizational and capital structures might operate differently across strong and weak governance contexts."

A growing number of comparative studies in economics and finance on the VC industry have identified significant institutional differences between common and civil law countries (Kaplan et al., 2004; Kaplan and Stromberg, 2003; Lerner and Schoar, 2005). This research documents that VCs in countries with a common law tradition and with better legal enforcement of contracts are more likely to use convertible preferred stock that shifts control rights to investors depending on the performance of the venture (Lerner and Schoar, 2005; Cumming, 2005, 2006a). In addition VCs in common law countries widely use other contractual arrangements to protect their investments, such as liquidation preferences, antidilution protections, vesting provisions, and redemption rights (Kaplan et al., 2004; Kaplan and Stromberg, 2003). These provisions enhance the governance roles of VCs in common law countries compared to civil law countries. Evidence also shows significantly greater VC monitoring of investments in the United States and the United Kingdom than in France (Sapienza, et al., 1996).

Research based on international comparisons indicates that the reputational incentives of VCs are relatively higher in common law countries. For example, Kaplan et al. (2004) document significant differences in the level of independence of VCs and the composition of investors who provide funds to them. In common law countries venture capital firms as a rule are independent institutions, and their main sources of finance include pension funds, insurance companies, and other institutional investors. In civil law countries with bank-centered governance systems, such as France, banks are the major source of external finance for VCs. In addition VCs tend to be subsidiaries of banks and other financial institutions (so-called captives).

Focusing on the rationale of Arthurs et al. (2008), the extent of the multiple agency conflict associated with the VCs at the time of IPO could be different in common and civil law countries. VCs in civil law countries are more likely to be captive firms, so the salience of the multiple agency conflict is likely to be higher than in the United States and United Kingdom. Remuneration in independent VCs is usually more aligned with the interests of fund investors than is remuneration for captive VCs in relation to their parent firms. Captive VCs may also have shorter monitoring horizons since there is a tendency to be assessed by their parent firms on the basis of an annual return on capital, while independent VCs are more likely to be assessed on the internal rate of return over the funds' life (Robbie et al., 1997). These factors combined may further limit the certification

and monitoring abilities of VCs in civil law countries compared to those in the United States and the United Kingdom.

In their analysis of the institutional characteristics of VCs in different countries Bruton et al. (2010) suggest that, although VCs' retained ownership generally has a negative effect on IPO performance, the extent of their impact may be less prominent in common law countries with a more developed market infrastructure, reputational incentives, more active involvement, diverse contractual arrangements, and stronger legal protection of minority shareholders.

In contrast, the business angels' flexibility and longer time horizon is well suited to countries with a less formal institutional framework and less legal protection of minority shareholders, such as a civil law country as opposed to a common law country like the United States, where legal rights of minority shareholders are better protected. This is because the angel is able to work with the investee more closely and over a longer term seek to solve problems that arise, whereas a VC has relatively short-term horizons. If there is a problem to be solved, it may be possible to work it out among the parties over a longer time, whereas, with a shorter time horizon, the VC must often rely on legal means to reach a solution. Moreover angels' preference to invest in firms closer to them geographically makes relational monitoring easier than for VCs (Sohl, 1999), and this is particularly important in geographically diverse countries (Chantelot, 2004).

There are other significant institutional differences between countries that lead to potential differences in angels' effects on the IPO value. For example, in the United Kingdom business angels are organized through the development of networks that have gradually evolved into knowledge-based intermediaries (Aernoudt et al., 2007). These networks are often supported by the government through tax concessions (e.g., the United Kingdom's Enterprise Investment Scheme) and full or partial guarantees against risks when the loss burden is shared with a public authority (e.g., the U.K. Department of Industry and Trade Capital Fund Program and Scottish Co-investment Fund). Following the arguments of Arthurs et al. (2008), this process of networking and government financial guarantees introduces potential multiple agency problems that are likely to reduce the extent of alignment of interests of angels and minority public market investors. Bruton et al. (2009) argue that in countries where the business angel industry is highly individualized and where legal protection of minority shareholders is weak, business angels are better positioned to monitor the behavior of management.

To summarize, this research has provided a strong indication that ownership concentration and presence of private equity investors can be powerful tools in corporate governance of IPO firms. However, it also demonstrates that ownership concentration is not a cure for all the ills of corporate governance. Instead ownership concentration is a tool in corporate governance whose impact differs based on the institutional setting in which it occurs. Similarly different types of private equity investors can lead to contrasting performance outcomes, depending on the country of origin of the firm.

Discussion and Future Research

Governance research is growing in importance, and the role of ownership effects is a central feature of such research. Most studies on the effects of ownership concentration on performance have examined mature companies and have used samples drawn from the common law environments of the United States or, to a more limited degree, the United Kingdom. However, a growing appreciation is forming of the heterogeneity of governance mechanisms (Aguilera and Jackson, 2003) and of how the appropriate governance mechanisms may differ as the setting of the firm changes (Lynall et al., 2003; Filatotchev and Wright, 2005). To date, empirical work has not fully explored these conceptual developments. In particular, researchers neglect the implication of different firm and institutional contexts for the relationship between ownership patterns and IPO firm performance.

For entrepreneurial firms the IPO is both a sign of a high degree of success to date and an indication that the firm will have greater resources to pursue its strategic goals in the future. For the entrepreneurs, who are often referred to as "paper millionaires" until the IPO stock market flotation, the IPO is the first opportunity to actually obtain cash from their entrepreneurial venture. The IPO is thus a highly significant event for the entrepreneurial firm, where "investors' discount" can steal part of the benefit that the entrepreneurial firm and the entrepreneur may seek from the IPO. This research extends our understanding of the role played by private equity investors in the IPO and informs future research on this important event in the life of an entrepreneurial firm.

This chapter extends agency theory by integrating two distinct types of agency conflicts at the time of the IPO (adverse selection and moral hazard) into the understanding of IPO performance. The separation of private equity investors into venture capitalists and business angels also provides further important insights. This chapter considers the heterogeneity of private equity investors, looking at the impact of both formal (venture capital) investors and informal (business angel) investors, such investors being previously cited by Jensen (1993) as the model for corporate governance. It shows that their impacts on IPO firm performance are different, with angels having a significant value-enhancing effect. The separation of these two types of investors contributes to the body of agency research by addressing their impact on the specific agency conflicts of adverse selection and moral hazard. Previous research generally emphasizes similarities between financing decisions of VCs and angel investors (see, e.g., Shane and Cable, 2002, for a discussion of investors in high-technology ventures in the United States). More advanced research suggests the importance of recognizing the differences in venture capitalists and business angels in the context of the stock market evaluation of quality of IPO firms. This research therefore has strong implications for studies of the short-term IPO performance and venture capital, in line with Busenitz et al.'s (2005) arguments that there is a need for more refined and specific examinations of signaling theory.

The key to such future research is employing finer-grained methods that allow richer insights to be drawn. As discussed, the inconclusive results seen in much of the prior research on performance of VC-backed IPOs is likely in part due to the coarse methods that have been used. Greater specification of the sample and of the variables is required for the investigation of IPOs and signaling. The impacts of the variables are very distinct, and if these factors are blended in a coarse manner their organizational outcomes may be ambiguous.

This survey of IPO literature suggests that institutional factors, such as the depth and breadth of the private equity industry and corporate governance–related regulatory initiatives, may affect the IPO investment process both in terms of the extent of IPO performance and the role of different types of financier. There is growing recognition that the governance and operation of VC firms may depend on the institutional environment (Jeng and Wells, 2000; Black and Gilson, 1998). Further research might usefully extend analysis of the role of risk financiers to other institutional contexts, such as countries with network-based corporate governance systems (La Porta et al., 1997). For example, it is clear that the extent of syndication is significantly greater in the U.S. venture capital industry compared with that in Europe (Wright and Lockett, 2003). Future analysis may also shed light on the main drivers of the syndicated investments as well as their organizational outcomes.

Future research should also continue the examination of the governance roles of private equity investors in IPOs outside the United States. Too often research in entrepreneurial topics remains concentrated in North America (Bruton et al., 2008). There is a diverse range of nations and institutional settings in which entrepreneurship can be pursued. The examination of topics such as signaling should be expanded beyond the U.S. context to develop a better understanding of factors that affect IPO performance. For example, today in emerging markets there is extensive entrepreneurship development, and how signaling impacts organizational outcomes in these markets would appear ripe for investigation.

More generally an increasing number of studies suggest that agency problems may be different in different national settings and imply that researchers should integrate the agency framework with institutional analysis to generate robust predictions. Future research should expand on this concept further and seek to more explicitly examine the nature of agency conflicts and their implications in different institutional settings (Aguilera and Jackson, 2003). For example, in addition to French civil law contexts (e.g., Spain and Italy; Hoskisson et al., 2004), there is the German civil law context and a distinctive Scandinavian legal environment (Fiss and Zajac, 2004; La Porta et al., 1998, 2000). Do these institutional environments have an impact similar to French civil law? Alternatively investor protection in German civil law is less prevalent than in common law but more than in French civil law. Is the impact of German civil law somewhere between the other two legal environments?

Because of space constraints this chapter cannot cover other important areas related to the interrelationships between private equity investors and IPO

performance. For example, I focused on the governance roles of ownership patterns and their impact on performance. However, other governance factors may also have importance that may differ from country to country. Prior research indicates that private equity investors gain detailed knowledge and substantial formal decision-making rights in firms that they finance (Lerner, 1994). They also impose contractual restraints on managerial discretion while the firm is private, including the use of staged investment, an enforceable nexus of security covenants, and the option to replace the entrepreneur as manager unless key investment objectives are met (Gompers, 1995; Gompers and Lerner, 1999; Kaplan and Strömberg, 2003; Megginson and Weiss, 1991; Sahlman, 1990). However, these special rights may end or be reduced at the time of the IPO. Barry et al. (1990) show the effects of retained VC ownership and board presence following an IPO but do not consider the relationship with post-IPO performance. Therefore it is important to look at specific corporate governance channels, such as board presence and contractual framework, that facilitate monitoring of IPO firms. Although a comprehensive analysis of this complex interplay of various governance factors goes beyond the scope of this chapter, Bruton et al. (2009) suggest that institutional differences significantly affect the roles played by different internal governance mechanisms. Researchers need to conduct a more fine-grained analysis to understand the interplay of these variables on corporate governance.

This chapter did not explore specifically how the VC teams and the IPO's corporate governance changed from founding until going public. There are commonly several rounds of financing between a firm's founding and IPO, with each new financing round resulting in some changes to the team and board. An obvious extension to this current research would be to explore how the extent of board independence and ownership structure change over time, and how different team and board characteristics attract external backers at each round, and vice versa.

An IPO is not the final stage in the corporate governance life cycle. In a dynamic perspective, corporate governance factors may be affected by strategic choices and outcomes, and the choice of the various governance options could be associated with changes in organizational strategy and firm performance. For example, board diversity may be driven by the organization's growing needs for managing the important external elements of the environment that are related to changes in the organization's size and diversity (Provan, 1980). Therefore the post-IPO evolution of the firm's governance system is a key research issue.

Notes

1. Researchers commonly focus on a one-day window (trading at the end of day 1) when evaluating underpricing (Loughran and Ritter, 2004). A few studies have examined trading at the end of one month.

2. Megginson and Weiss (1991) compare VC-backed IPOs to non-VC-backed IPOs from 1983 to 1987 matched by industry and offering size. They find that the initial underpricing of VC-backed IPOs is significantly lower than for non-VC-backed IPOs. Barry et al. (1990) analyze the monitoring role of VCs in IPOs from 1978 to 1987. They find that the number of VCs invested in the issuing firm is negatively related to initial underpricing.

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CHAPTER 17

THE ROLE OF PRIVATE EQUITY IN PRIVATE ACQUISITIONS

HALIT GONENC AND KOOS LEISINK

Several studies document positive bidder announcement returns for firms acquiring private targets. Hansen and Lott (1996), Chang (1998), Fuller et al. (2002), and Moeller et al. (2004) report this evidence in U.S. acquisitions. Similar findings are reported by Conn et al. (2005), and Draper and Paudyal (2006) for U.K. bidders and by Faccio et al. (2006) for Western European bidders. Officer (2007) finds that unlisted targets are sold at discounts of 15 to 30 percent relative to comparable public targets. Even though these studies provide several explanations for positive bidders' gain from private deals, the role of private equity (PE) firms in private acquisitions is left out of the literature. This study aims to fill this gap. PE firms are subject to several mechanisms that are generally uncommon to other private firms. As such, announcement returns for bidder firms acquiring private targets owned by PE firms (PE-backed) and other parties (non-PE-backed) can be different.

There exist several explanations for the bidders' gain and price discount from acquisitions of private firms. Two of these explanations have strong empirical support: information asymmetry along with lack of information about private targets (Hansen, 1987; Moeller et al., 2007) and insufficient liquidity sources of private firms (Officer, 2007). Information asymmetry refers to the market's view of the value of the bidder's shares. Since the level of publicly available information is different between acquisitions involving public and private targets, the effect of this problem can be different. For a private target firm, none of the parties involved in the acquisition has sufficient information about the target, and the difference between what the bidder and the seller know about the value of the target is relatively high.

Liquidity is very important for private firms because raising external financing is often difficult and very costly for them.

When uncertainty about the value of target firms is high because of the lack of information, the market cannot measure the advantage of the acquisition for the bidder. As a result theory predicts a negative relationship between information asymmetry and the bidders' abnormal returns. If the bidder firm, which is afraid of overpaying the value of the target, pays deal value with its equity, then the market considers stocks of the bidder to be overvalued at the time of the acquisition announcement. In line with this theory we observe negative or no abnormal returns for acquisitions of public firms paid with bidders' shares. In the case of acquisitions of private firms, however, Moeller et al. (2007) argue that a payment with shares still signals good news. In such an acquisition, the private target firm accepting the bidder's shares helps to reveal the fact that the bidder's stocks are not overvalued because the target private firm can gather confidential information from the bidder. On the other hand, when the bidder makes a cash payment, the market takes this information as implying that the bidder's stock is worth more than its market value, which leads to a positive abnormal announcement return. In the case of a private target, bidders may also require a higher risk premium on their return; this creates a discount on deal value. Thus the market believes that the deal is more valuable, and then produces a higher announcement return for the bidder. However, when there is information asymmetry about the value of the target, a cash payment may still reduce the benefit of an acquisition.

Officer (2007) provides evidence that the need for liquidity is an important factor to explain why private targets and subsidiaries are sold at discount. The sale of an (unlisted) asset is an important source of cash for private firms since raising liquidity externally is very costly for a subsidiary or an entire stand-alone firm (Brav, 2009). Debt can be a solution to the cash problem, although this source has its limitations and can also be the cause of the need for liquidity. Officer supports this liquidity argument by investigating the data on subsidiary targets to express the parent's need for cash.[1] Subsidiaries, on average, have only a small fraction of total assets in comparison to their parents, but the proceeds from the subsidiary sale contribute significantly to the parent's cash level (over 100 percent of prebid parent cash level). Moreover Officer finds a higher discount on targets' values when debt markets are tighter and when the price for alternative sources of liquidity is higher. More important, he shows that information asymmetry explains only the portion of acquisition discounts, which is unexplained by liquidity factors.

This chapter examines strategic bidder announcement returns for firms acquiring private targets that are either PE-backed or non-PE-backed. A PE-backed target refers to an asset that is first acquired by a PE firm and then sold (exited) to a strategic buyer. Our first aim is to see if bidders of PE-backed targets gain from such private deals, as is consistent with the evidence documented for bidders of non-PE-backed targets in the literature.

There are several reasons to expect that the bidders' announcement returns for PE-backed targets can be different from those for non-PE-backed targets. The

information asymmetry problem is likely to be mitigated by PE companies because they review potential buyers in an early stage and often provide them with a vendor due diligence report, an independent review of the target's operations and assets provided by the seller. This may lead to higher announcement returns for bidders of PE-backed targets paid especially with equity. Gompers and Xuan (2008) show that venture capital (VC) companies can "bridge" this asymmetric information with strong personal and professional relationships; this bridge is particularly strong if both firms were financed by the same VC firm. They argue that the bidders of private VC-backed companies do not suffer any adverse selection problem. As an opposite view, Cumming and Walz (2010) argue that PE fund managers may report inflated valuations of private investee companies that are not yet sold to obtain more funds from institutional ownership. They find significant systematic biases that exist in the reporting of fund performance to institutional investors in thirty-nine countries. Hence it is possible that the degree of asymmetry information is higher for PE-backed targets, suggesting lower bidders' announcement returns for PE-backed private deals for acquisitions paid by either shares or cash. The reason for the expectation of different bidders' gain from acquisitions of PE-backed targets paid by cash is the liquidity constraint. In terms of the liquidity argument, the lack of liquidity may be less severe for PE funds, which are not likely to be forced to sell assets resulting from the need for cash, as they usually have large cash funds backing them up.

In this chapter we also examine the announcement returns of bidders across acquisitions involving only PE firms. There are two important reasons to expect that bidders' returns are different across PE deals. One important reason is a well-known fact, which is the certification of PE firms' reputation. A highly reputable PE firm does not want to sell its assets with a discount. We introduce another important factor that also determines the gain of public bidders from acquisitions of PE-backed private targets: the PE firms' ability to control. In a recent study on European VC investments, Cumming (2008) shows a positive relationship between VC controls and full or partial exits through either an IPO or an acquisition. Cumming argues that VCs exit within six months to two years, when they are less actively involved (see also Gompers and Lerner, 1999). PE firms need time to optimize the asset for the sales process, but on the other hand should not wait too long before transferring the asset, as it becomes more difficult to generate sufficient monetary benefits. An early exit (around two years or less) of a PE firm would indicate less involvement and also lower expectations for future monetary benefits. It is likely that an early exit indicates liquidity needs of PE firms, consistent with the liquidity argument of Officer (2007). In such cases a PE firm may have to offer a discount to the buyer, which in turn would create a higher announcement return for the bidder's stocks.

We use a sample of 100 PE-backed and 1,024 non-PE-backed private targets located in fourteen Western European countries (all countries from the EU-15 except for the United Kingdom) for the period 2001–2008. We do not find a difference, on average, in announcement returns for bidders of PE-backed and non-PE-backed targets, but do find significant support for lower announcement returns for bidders of

PE-backed targets with cash payments. This evidence indicates that the market still considers information asymmetry for bidders acquiring PE-backed private firms to be more important than bidders acquiring non-PE-backed private firms when the deal is paid in cash. Further, among all PE deals, we find evidence for higher gains of bidders of PE-backed targets when PE firms have low reputation and exit within twenty-five months. However, bidders' announcement returns are higher when early exits of PE firms are associated with cash payments, which may be an indication of both lower expectation on the basis of losing control and liquidity needs.

The rest of the chapter proceeds as follows. We first review the features of PE investments, then we describe our sample selection, data sources, and variable definitions. We analyze differences in announcement returns of bidders from acquisitions of PE-backed and non-PE-backed targets and present our empirical results. We conclude the chapter with a summary of our main findings.

Private Equity Investments

Private equity has been a constant field of interest ever since the leveraged buyout wave of the 1980s. The essence of the private equity model is that better informed investors interact with highly motivated executives in a closer working relationship with more open discussion at the board level. An interesting characteristic of PE firms is that they are private and often disclose little information about the firms they manage. This makes it hard for researchers to study PE-backed entities and their performance and explains the limited number of studies that have been carried out in this field.

The literature on PE and VC investments provides important information about their operations. PE-backed firms are highly leveraged, whereas VC-backed firms' underlying business is often too unstable to use debt financing. The leveraged buyout investment firms are PE firms. In a typical leveraged buyout transaction, the PE firm buys majority control of an existing or mature firm (Kaplan and Strömberg, 2009). Both PE and VC firms invest in other companies and closely monitor management. VC firms invest in entrepreneurs who need financing to fund a promising venture (Kaplan and Strömberg, 2003). If the firm performs poorly, the VCs obtain full control; as performance improves, the entrepreneur retains more control rights. Both types look for an exit in due course and typically have multiple investments at a time. Given these facts, PE funds desire to increase short-run performance and sustain long-term growth. Furthermore an average PE-backed firm has a mature business with stable cash flows, whereas a VC-backed

firm in general is a start-up firm with high growth potential and unstable future cash flows. For the latter, it is often the intellectual property and human capital that is of most interest. However, Lerner et al. (2011) find the opposite: that PE firms do not sacrifice long-run investments, but benefit by refocusing their firms' innovative portfolios. Both types of investments also have different risk: PE-backed firms face higher risk with large debt levels and corresponding default risk; VC firms face higher risk with uncertainty of future cash flows. These features of these two types of funds may create different strategies in deciding an exit period. PE firms may decide to exit sooner than a typical VC firms does when they lose their ability to control the firm's management.

PE is well known for its way of doing business. The main objective of a PE firm is to acquire a company, manage it closely, rationalize cash flows, exit the company after some period (Cumming and Walz, 2010), and hence maximize monetary benefits. The funds collected from private investors require high rates of return.[2] PE firms with large funds typically try to exit the company within an optimum period, after which the initial investment plus returns have to be paid out. Therefore PE firms operate in liquid debt and capital markets and search for positive market outlook and attractive entry (low) and exit (high) valuations. Management's interests in private firms are often aligned with that of the PE firms. In general, current management in firms financed by PE funds is competent and well-experienced. The acquisition is financed with large amounts of debt, and making repayment of debt is among the most important goals of the company. Therefore PE firms hold attractive assets that can serve as collateral to obtain higher and better levels of debt. The target has high and stable cash flows, which are the basis for repaying debt.

The operational characteristics of PE-backed targets often show similarities. When a PE fund invests in a company, it often involves a market leading asset with stable cash flows. During this investment period, optimizing cash flows is the most important objective. On the one hand, the organization in general will be led more tightly and there will be stricter control on costs, which leads to a healthier organization. On the other hand, the focus on cash flows can lead to disturbed relationships with suppliers and underinvestment in necessary capital expenditures.

PE firms always have to look for possible investors in order to use the proceeds for capital investments. As the number of PE investors increases, the battle for funds becomes more competitive. If investors have to make a choice of which PE firms to fund, firm reputation can be an important factor to help make this decision. Nahata (2008) finds that more reputable VC firms have easier access to investor funds, that their offers for targets are more likely to be accepted, and that they acquire targets' equity at discount. This suggests that a good reputation is beneficial at the entry stage. In addition the author finds that more reputable VC firms exit through IPOs and acquisitions more often than less reputable firms. Demiroglu and James (2010) find better lending terms for reputable PE firms over firms with lower reputation. Cumming (2008) adds that high reputation can certify the quality of a VC asset.

Sample Selection and Variable Definitions

Sample Selection and Data Sources

We use acquisition data from Zephyr, which is the database on mergers and acquisitions, IPOs, and venture capital deals by Bureau van Dijk. First, we collect all acquisitions where targets are classified as private. Zephyr provides a function, "exit," which includes all deals in which a PE firm exits an asset. By using this function, we determine the subsample of PE-backed targets. We apply the following selection process. We include a restriction in which the deal has to be announced between 2001 and 2008 and requires a minimum deal value of 10 million euro. The next step is to reduce the set of deals by removing all deals where the target is from outside the EU-15 and exclude deals with targets from the United Kingdom, ending up with fourteen countries.[3]

We exclude U.K. deals for two reasons. First, with London being the financial center of Europe and the fact that the majority of PE companies reside in London, we expect that U.K. deals would disproportionately dominate the sample, especially for PE deals. Second, as there has been quite a lot of research on private equity deals in Anglo-American cultures, we want to see whether certain effects exist in Continental European markets.

We exclude all deals that do not fulfill the following requirements: acquisitions where the bidders are financial institutions or Real Estate Investment Trusts (REITs); deals where the bidders buy less than 50 percent of targets' equity; and, inherently, deals where the bidders end up with less than 50 percent or deals where the bidders already have 50 percent of targets' equity. We do this to make sure that a change of control is established and that a significant part of the target is sold in the deal. Also we look in Mergermarket for all deals with a relative deal size (deal size/bidder size) higher than 100 percent, in which the target is larger than bidder, and look for any statements of a reverse takeover, and we exclude these from the sample. We want to make sure all PE target deals are buyout deals and not VC deals. A typical feature of VC is that the VC firm has a stake from a very early stage, often based on real options instead of relatively sure cash flows. We therefore set a barrier and manually look up all PE deals in Mergermarket. If we cannot find proof of the actual buyin, we exclude the deal. In addition, if Mergermarket classifies it as a VC deal rather than a PE deal, we exclude the deal.

The total sample includes 1,124 deals with targets across the fourteen EU countries, of which there are 100 PE deals and 1,024 non-PE deals. Table 17.1 presents a description of the sample. Panel A reports the number of acquisitions for the total sample and the two subsamples based on the geographic distribution of target and bidder firms. The geographic composition of private target firms shows that private firms from France, Germany, Italy, the Netherlands, Spain, and Sweden

Table 17.1 Description of the Sample

Panel A: Geographic Composition of Private Target and Bidder Firms

Target Country	Total Sample		Non-PE-Backed		PE-Backed		Bidder Country	Total Sample		Non-PE-Backed		PE-Backed	
	N	%	N	%	N	%		N	%	N	%	N	%
Austria	20	1.8	19	1.9	1	1.0	Austria	10	0.9	9	0.9	1	1.0
Belgium	42	3.7	41	4	1	1.0	Belgium	26	2.3	24	2.3	2	2.0
Denmark	39	3.5	34	3.3	5	5.0	Denmark	14	1.2	13	1.3	1	1.0
Finland	42	3.7	34	3.3	8	8.0	Finland	42	3.7	35	3.4	7	7.0
France	187	16.6	169	16.5	18	18.0	France	114	10.1	105	10.3	9	9.0
Germany	254	22.6	227	22.2	27	27.0	Germany	62	5.5	59	5.8	3	3.0
Greece	18	1.6	18	1.8	0	0.0	Greece	19	1.7	19	1.9	0	0.0
Ireland	41	3.6	39	3.8	2	2.0	Ireland	28	2.5	28	2.7	0	0.0
Italy	147	13.1	139	13.6	8	8.0	Italy	99	8.8	96	9.4	3	3.0
Luxembourg	5	0.4	3	0.3	2	2.0	Luxembourg	2	0.2	1	0.1	1	1.0
Netherlands	117	10.4	107	10.4	10	10.0	Netherlands	44	3.9	36	3.5	8	8.0
Portugal	22	2	22	2.1	0	0.0	Portugal	11	1.0	11	1.1	0	0.0
Spain	100	8.9	95	9.3	5	5.0	Spain	70	6.2	69	6.7	1	1.0
Sweden	90	8	77	7.5	13	13.0	Sweden	60	5.3	55	5.4	5	5.0
							Australia	20	1.8	19	1.9	1	1.0

(*continued*)

Table 17.1 (continued)

Panel A: Geographic Composition of Private Target and Bidder Firms

Target Country	Total Sample		Non-PE-Backed		PE-Backed		Bidder Country	Total Sample		Non-PE-Backed		PE-Backed	
	N	%	N	%	N	%		N	%	N	%	N	%
Total	1,124	100	1,024	100	100	100	Canada	24	2.1	23	2.2	1	1.0
							Iceland	8	0.7	5	0.5	3	3.0
							India	19	1.7	18	1.8	1	1.0
							Israel	10	0.9	10	1.0	0	0.0
							Japan	16	1.4	15	1.5	1	1.0
							Norway	28	2.5	25	2.4	3	3.0
							Switzerland	19	1.7	15	1.5	4	4.0
							U.K.	153	13.6	141	13.8	12	12.0
							U.S.	192	17.1	162	15.8	30	30.0
							Others	34	3.0	31	3.0	3	3.0
							Total	1,124	100	1024	100	100	100

Panel B: Distribution of Sample in the Period

	2001	2002	2003	2004	2005	2006	2007	2008	Total
# of acquisitions									
Total sample	22	99	109	132	190	215	224	133	1124
Non-PE-backed targets	21	96	104	123	170	197	197	116	1024
PE-backed targets	1	3	5	9	20	18	27	17	100
# of bidders									
Total sample	21	84	91	103	155	165	151	100	870
Non-PE-backed targets	20	81	87	95	137	147	124	85	776
PE-backed targets	1	3	4	8	18	18	27	15	94

Panel C: Summary Statistics of Deal Characteristics

	Total Sample (N=1,124)		Non-PE-Backed (N=1,024)		PE-Backed (N=100)	
Bidder size	2,710.620	655.378	2,670.800	606.180	3,118.380	1,066.780
Deal value	235.532	48.550	226.890	43.800	324.026	117.873
Relative size	0.087	0.074	0.085	0.072	0.104	0.110
Exit					41.9	36.0

Notes: Sample consists of acquisitions of private firms by listed bidders in fourteen Western European countries for the period 2001–2008. Bidders are firms from all over the world. The sample is divided into targets exited by private equity firms and firms previously owned by non-PE firms. Bidder size is measured by the market value of bidders. Bidder size and deal values are in millions of euros. Relative size is the ratio of deal value to the market value of bidder. Exit is the total number of months that PE has ownership from buyout to the exit.

obtain more than 70 percent of total firms. The distribution of PE-backed targets is very similar. When we examine the countries for bidder firms, we see that U.S. firms have the highest number, followed by U.K. and French firms. Panel B reports the distribution of the sample in the period 2001–2008. The highest number of acquisitions occurs between 2005 and 2007. Furthermore there are 870 bidder firms (776 for non-PE-backed and 94 for PE-backed targets), indicating that some bidders make more than one acquisition, but, on average, the number of multiple acquisitions is not large.

Panel C of Table 17.1 presents information on deal characteristics. Bidder size is measured by bidders' market value of shareholder equity. Size and deal values are shown in millions of euros. Relative size is the ratio of deal value to bidder size. Mean and median values of size for bidders of PE-backed private firms and deal values are larger than corresponding values of non-PE-backed firms. In addition, this panel shows that the exit period of PE firms in our sample is, on average, forty-two months.

Variable Definitions

This research studies the bidders' announcement returns of PE-backed and non-PE-backed targets. We measure an individual bidder's return as the cumulative abnormal return (CAR) of the bidder from two days before to two days after the announcement date. We use a market-adjusted return method and calculate the CAR using the following formula:

$$CAR_i = \sum_{t=-2}^{2} AR_{it} \tag{1}$$

where AR_{it} given by:

$$AR_{it} = R_{it} - R_{mt} \tag{2}$$

where AR_{it} is the abnormal return of bidder i at time t, calculated by subtracting the return of the market index (R_{mt}) from the return of the bidder (R_{it}). The market index is the value-weighted local market index return of the bidder's country.

We use usual classifications for method of payments as only cash deals, deals with shares, and mixed. Size is the natural logarithm of bidder's market capitalization one week before acquisition and the relative size is the ratio of deal size to bidder's market capitalization. In our analysis we also control for geographic and industry relatedness between bidders and targets. A domestic (cross-border) acquisition refers to an acquisition where both the bidder and the target are located in the same (different) country. If a bidder and target operate in the same (different) industries classified by 4-digit SIC codes, then this acquisition is defined as a focused (diversified) acquisition.

Our proxy for the ability to control of PE firms is the length of PE involvement. First, we find the buyin moment for PE deals in Mergermarket; then we use these

data in combination with the exit moment to calculate the number of months of PE involvement.

In order to control for the reputation of PE firms, we assume that the larger the PE firm, the more reputable it is. The size we use in this study is based on a list published by *Private Equity International* (PEI; 2008), representing the fifty largest buyout funds over the previous five years. The list was first published in 2007, ranking PE firms based on capital raised from January 2002 to December 2006. In 2008 a new list was published with the largest funds over the years 2003–2007. Each top twenty-five company in the lists of either 2007 or 2008 is considered reputable. We do not use the top fifty funds, as the list of 2008 contains many new companies, which might be due to imperfect information in the list of 2007. On the other hand, narrowing down to the top ten firms leaves us with too few deals. Hence we use the top twenty-five funds to classify PE firms as highly reputable.

The name of PE firms along with number of firms they exit, average value of deals, and the total number of months from buyout to exit are presented in Table 17.2. PE firms are listed based on their reputation. The average deal value of low-reputable PE firms, which are not among the largest twenty-five funds, is significantly lower than that of high-reputable PE firms. Moreover high-reputable PE firms exit later than low-reputable PE firms (46.5 months versus 40.0 months), but the difference is not statistically significant.

Table 17.2 Private Equity Firms

Private Equity Firms	N	Deal Value	Exit
ABN Amro Capital Holdings BV	3	104.533	34.2
Accent Equity Partners AB	1	15.839	39.8
Activa Capital SAS	1	10.000	48.8
Andlinger & Company Inc.	1	47.500	31.1
ARQUES Industries AG	1	40.000	36.1
AXA Private Equity SA	2	231.000	29.7
Baird Capital Partners Europe Ltd	1	71.000	44.0
BancBoston Investments Inc.	1	100.000	38.5
Barclays Private Equity France SAS	2	86.000	10.0
BC Partners Ltd	1	60.000	34.7
Blue Skye Sarl	1	149.500	10.6
Botts & Company	1	48.600	58.9
BS Private Equity	3	81.000	36.5

(*continued*)

Table 17.2 (continued)

Private Equity Firms	N	Deal Value	Exit
Bure Equity AB	2	99.592	43.8
Candover Investments plc	1	187.029	34.1
CapMan Oyj	4	76.112	64.5
Citigroup Venture Capital Equity Partners LP	1	1,200.000	60.5
Credit des Alpes	1	35.000	104.4
Dangaard Holding A/S	1	538.314	8.2
Debitel (Netherlands) Holding BV	1	1,627.820	47.9
Doughty Hanson & Co., Ltd	1	1,550.000	29.0
Erikem Luxembourg SA	1	345.000	108.0
Gilde Investment Management NV	1	60.000	24.0
Greenfield Capital Partners BV	1	1,120.000	26.5
Happen Naar BV	1	70.000	66.2
HgCapital Ltd	1	240.992	36.0
HSBC Private Equity Ltd	1	223.632	19.1
IKB Private Equity GmbH	1	130.000	20.3
Industri Kapital (Deutschland) GmbH	1	730.000	57.0
Industri Kapital AB	3	295.029	19.9
Intermediate Capital Group plc	1	272.650	92.9
Investitori Associati SGR SpA	1	30.100	52.3
L Capital Management SAS	2	504.157	37.2
LBO France Gestion SAS	1	1,245.000	20.1
Legal & General Ventures Ltd	2	375.425	39.9
Malmöhus Invest AB	1	17.657	40.8
MB Rahastot Oy	1	127.000	38.5
Mercapital Servicios Financieros SA	1	140.000	71.2
Montagu Private Equity LLP	1	81.444	33.3
MPS Venture SGR SpA	1	54.234	27.1
Natexis Banques Populaires	1	60.000	13.0
Nordic Capital AB	2	163.417	60.5
Partech International SA	1	225.000	40.0
Platinum Equity LLC	1	490.000	22.7

Pricoa Capital Partners	1	13.800	57.4
Riverside Company, The	2	71.000	32.2
Summit Partners LP	2	239.295	23.2
Sun Capital Partners Inc.	1	140.000	24.7
Synergie Finance SA	1	118.000	35.6
Triton Advisers (Nordic) AB	1	235.000	30.1
Veronis Suhler Stevenson LLC	1	240.000	16.5
Vision Capital Group Ltd	1	47.274	49.1
Waterland Private Equity Investments BV	1	42.485	26.4
WL Ross & Company LLC	1	63.034	5.9
Low-Reputable PE firms	71	237.161	40.0
3i Gesellschaft für Industriebeteiligungen mbH	1	131.000	27.5
3i Group plc	8	212.106	37.0
Advent International Corporation	1	185.824	61.8
Apax Partners	2	58.500	44.2
Bain Capital LLC	1	2,200.000	59.2
Blackstone Group LP, The	1	1,450.000	40.9
CVC Capital Partners Ltd	4	859.235	47.6
Carlyle Group, The	1	82.000	27.9
Cerberus Capital Management LP	1	218.500	44.9
EQT Partners AB	4	237.987	60.9
EQT Scandinavia AB	1	117.745	71.0
Grid Industries SA	1	739.000	30.8
Kohlberg Kravis Roberts & Company LP	2	1,893.650	39.5
Permira Private Equity Ltd	1	450.000	86.8
High-Reputable PE firms	29	536.693	46.5
Difference (High-reputable—Low-reputable)		299.532	6.5
t statistics		[2.66]***	[1.33]

Notes: This table reports PE firms involving acquisitions of private firms by listed bidders in fourteen Western European countries for the period 2001–2008. PE firms' reputation is based on ranking by *Private Equity International*. Firms listed among top 25 in 2007, 2008, or both are classified as high reputable; otherwise they are classified as low reputable. Deal values are in millions of euros. Exit is the total number of months that PE has ownership, from buyout to exit.

Empirical Results

Bidders' Announcement Returns

In this section we report the bidders' announcement returns and perform a univariate analysis for comparisons of the mean and median returns across several subsamples. Panel A of Table 17.3 presents the mean and median of bidders' CARs for the total sample and for both subsamples of PE-backed and non-PE-backed deals, whereas Panel B presents the results for several classifications of only PE-backed deals. In Panel A we show the announcement returns for the total sample, the classification of method of payments, various time periods, and industry relatedness. Consistent with the previous findings on bidders' announcement returns from acquisitions of private firms, we find that the mean (median) announcement return for firms acquiring private firms is 1.80 percent (0.91), indicating the bidders' gain. Examining the returns of bidders acquiring PE-backed and non-PE-backed private target firms shows positive returns with a mean (median) of 1.76 percent (0.91) and 2.18 percent (0.76), respectively. Since the difference is not statistically significant, we can say that the bidders for PE-backed targets don't have different announcement returns than the bidders for non-PE-backed targets. The results from the total sample do not provide evidence that PE firms may be able to affect the level of information asymmetry for investors.

Next we check the possibility that the difference in announcement returns between PE-backed and non-PE-backed targets is driven by cash or share payments for deal values. We split the sample into three categories on the basis of method of payments. Deals are classified as "cash," "shares," and "mixed." Cash deals include only deals financed with cash. Deals with shares include all deals that have a stock component, but not cash. Mixed deals include the combination of shares with cash and some other type of method, such as earn-outs and deferred payments. For PE deals, returns are lowest for deals paid with cash, followed by deals paid with shares involved. Moreover bidder's mean and median returns for PE-backed targets are lower than those for non-PE-targets when the method of payment includes only cash. The differences for mean and median returns are significant at 10 percent (marginally for mean returns) significance level. While there is no statistically significant difference in bidder's returns for the two subsamples of the method of payment with shares, we find an opposite result for the deals including both cash and shares relative to the cash deals. For mixed deals, bidders' gain of PE-backed targets is significantly higher than that of non-PE-backed targets. These results are consistent with those found by previous research for the comparison of bidders' announcement returns between private and public target firms. For example, Conn et al. (2005) report lower positive announcement returns for cash deals among private targets for all acquisition types, namely cross-border versus domestic and focused versus diversified. Chang

(1998) finds that positive announcement returns are restricted to transactions financed with stock offerings. Lower bidder's gain from acquiring PE-backed targets with cash is inconsistent with the theoretical expectation of information asymmetry relative to stock payments. Thus we interpret these results as showing that there still exists information asymmetry with the involvement of PE

Table 17.3 Bidders' Announcement Returns

Panel A: Total Sample

	Total Sample		Non-PE-Backed		PE-Backed		Difference	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
All Acquisitions								
Total Sample	1.80	0.91	1.76	0.91	2.18	0.76	−0.43	0.14
	1,124		1,024		100		(−0.65)	[0.34]
Method of Payment								
Cash	2.18	1.20	2.33	1.28	0.82	0.11	1.51	1.17
	415		374		41		(1.65)	[1.83]*
Shares	1.45	0.71	1.40	0.71	2.23	0.74	−0.83	−0.03
	553		517		36		(−0.73)	[−0.46]
Mixed	1.97	0.85	1.53	0.65	4.55	1.48	−3.02	−0.83
	156		133		23		(−2.08)**	[−2.50]***
Alternative periods								
2001–2004	1.82	0.80	1.81	0.90	2.15	0.02	−0.34	0.88
	362		344		18		(−0.19)	[0.50]
2005–2006	1.92	0.85	1.92	0.86	1.90	0.73	0.02	0.13
	405		367		38		(−0.02)	[0.05]
2007–2008	1.63	1.06	1.51	0.96	2.44	1.49	−0.93	−0.53
	357		313		44		(−0.92)	[−0.78]
Industry Relatedness								
Focused	1.72	0.79	1.64	0.76	2.52	1.17	−0.88	−0.41
	783		706		77		(−1.17)	[−1.13]
Diversified	1.96	1.08	2.03	1.09	1.08	−0.65	0.95	1.74
	341		318		23		(0.73)	[1.27]

(*continued*)

Table 17.3 (continued)

Panel B: Only PE-Backed Targets

	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Exit Strategies								
	Early Exit		**Moderate Exit**		**Late Exit**		**Difference Early—Others**	
PE-Targets	3.64	2.11	1.89	0.21	1.32	0.56	2.03	1.73
	25		50		25		(1.30)	[1.83]*
Reputation								
	High-Reputable			**Low-Reputable**			**DifferenceHigh—Low**	
PE-Targets	1.33		−1.03	2.53		1.26	−1.20	−2.29
	29			71			(−1.85)*	[−1.87]*

Notes: This table reports the mean and median percentages of cumulative abnormal returns (CARs) of bidders acquiring PE-backed and non-PE-backed firms and the corresponding test statistics. The CAR for each acquisition is calculated by summing the difference between the acquirer's stock return and the return of local market index of the bidder's home country during the five days surrounding the announcement (i.e., −2,+2). Below the mean and the median, we report the number of observations involved. A domestic (cross-border) acquisition refers to an acquisition in which bidder and target are located in the same (different) country. If a bidder and target operate in the same (different) industries classified by 4-digit SIC codes, this acquisition is defined as a focused (diversified) acquisition. Early exit group includes PE-backed targets in which PE firms exist for 25 months. The number of months for the group of moderate exit is between 25 and 58 months. The late exit group exit later than 58 months. PE firms' reputation is based on rankings by *Private Equity International*. Firms listed among top 25 in the list of 2007, 2008, or both are classified as high-reputable; otherwise they are classified as low-reputable. Significance of differences between means and medians is based on a t-test for mean differences (in parentheses) and a Wilcoxon rank test for the median differences [in square brackets]. ***, **, and * denote 1%, 5%, and 10% significance levels, respectively.

firms when the method of payment is selected as cash payment. Our analysis in the next section investigates this issue in terms of liquidity constraints and the reputation of PE firms.

The rest of Panel A of Table 17.3 examines the announcement returns and the differences between PE-backed and non-PE-backed targets over time and the industry relatedness between bidders and targets. Our results show that bidders' gains with the acquisitions of either PE-backed or non-PE-backed targets are very similar over time and between focused and diversified acquisitions. We conclude that the comparison of two subsamples is insensitive to various subperiods and industry relatedness. The overall evidence from table shows that PE firms play an important role in decreasing asymmetric information along with the choice of the method of payment.

Exit, Reputation of PE Firms, and Bidders' Announcement Returns

In the previous section we compared bidders' announcement returns between non-PE-backed deals and PE-backed deals. We now examine PE firms' involvement, which helps us to understand the alternative roles of PE funds in acquisitions of private firms. Our main interest in this section is to understand why bidders' gain for PE-backed targets in acquisitions paid with cash is lower, on average, than that for non-PE-backed targets. We have two aspects of PE involvement that might explain this issue. The first aspect is the duration of PE ownership, which is measured by the number of months from the moment a PE firm buys out a private firm to the moment it exits. We argue that there could be a relationship between ability to control PE firms and the duration of PE ownership. Since an early exit, which happens within six months to two years, indicates less control (Cumming, 2008), it is highly likely that the expectation of PE firms for future monetary benefits is lower. If this is true, then PE firms would want to liquidate their investments as soon as possible. Therefore, in the case of an early exit, PE firms may have to offer a discount to the buyer, which in turn would create a higher announcement return for the bidder's stocks.

The second potential candidate to explain the role of PE investments is the reputation of PE firms, as Nahata (2008) and Demiroglu and James (2010) indicate. Apart from easier funding and lower entry barriers, a good reputation can lead to an easier exit or better terms. This suggests that reputable PE firms can arrange better exit terms than less reputable PE firms. In turn this leads to higher values for targets backed by reputable PE firms than for targets backed by less reputable PE firms. Therefore it is expected that announcement returns of bidders acquiring private firms backed by high-reputable PE firms should be lower than the returns of bidders acquiring low-reputable PE-backed targets.

Panel B of Table 17.3 presents the bidders' announcement returns for the classifications of the duration of PE ownership and reputation of PE firms. Regarding the first aspect, we create three different groups by using the values of the first and the last quartile of the duration of PE ownership for all PE-backed target firms. The early exit group includes PE-backed targets in which PE firms exit within twenty-five months. The number of months for the group of moderate exit is between twenty-five and fifty-eight. The late exit group contains PE-backed firms that exit later than fifty-eight months. We also perform a test on the difference between the mean and median values of the variables between the early exit group and the two other groups jointly. The figures for these three exit strategies show a negative relationship between the duration of PE ownership and the bidders' announcement returns. This indicates that the bidders acquiring PE-backed targets with low exit periods have higher gains. The mean (median) values of the early exit group are 2.03 percent (1.73) higher than those of average returns of the combination of the moderate and late exit groups. The difference in median

returns is statistically significant at the 10 percent level. This evidence shows that the announcement returns of bidders acquiring private targets, which were exited by PE firms within twenty-five months, are significantly higher than overall announcement returns of bidders of PE-backed targets. There is a possibility that PE firms exiting early would want to make deals with cash payments since they also need to liquidate such investments as soon as possible, and in turn they may have to offer a higher discount. Even though we have shown that cash deals in general reduce the bidders' return, the situation of PE firms can be explained differently. The relationship between exit strategies and cash payments will shed more light on how these two factors have a combined effect on bidders' gain. We address this issue in the next section, where we perform a regression analysis by controlling other deal characteristics.

Reputation of PE firms is the second aspect we examine in Panel B of Table 17.3. We argue that PE firms with the largest funds most often have a history of successful buyouts and returns. Therefore PE firms that raise the largest funds over the prior year are considered highly reputable. The results show that the bidders' announcement returns from acquisitions of targets backed by high-reputable PE firms are lower than that for targets backed by low-reputable PE firms. The mean (median) returns of high-reputable and low-reputable groups are 1.33 percent (–1.30) and 2.53 percent (1.26), respectively. The differences in both mean and median returns between high- and low-reputable groups are statistically significant at the 10 percent level.

We further examine the impact of reputation of PE firms on the gain of the bidders of private targets with a longer event window surrounding the announcement. Figure 17.1 displays the CARs of the bidders during the period ten days before and ten days after the acquisition announcement of private firms backed by low- and high-reputable PE firms. Before the announcement the CARs do not show any important difference between the bidders acquiring private firms backed by either low- or high-reputable PE firms. However, the CARs for low-reputable PE-backed deals have a higher jump at the announcement and continue to provide a higher gain to the bidders than the deals involving high-reputable PE firms.

The results for the comparisons of announcement returns between low- and high-reputable PE funds are in line with the expectation that reputable PE firms may provide better information for the true value of firms and do not sell their firms with a discount. It is also possible that higher bidders' gain from acquisition of private firms backed by low-reputable PE firms can be attributed to early exit strategies. We also examine this possibility with the regression analysis in the next section.

Multivariate Analysis

In order to confirm our conclusions from the univariate analysis in the previous section, we estimate regression models explaining five-day cumulative abnormal

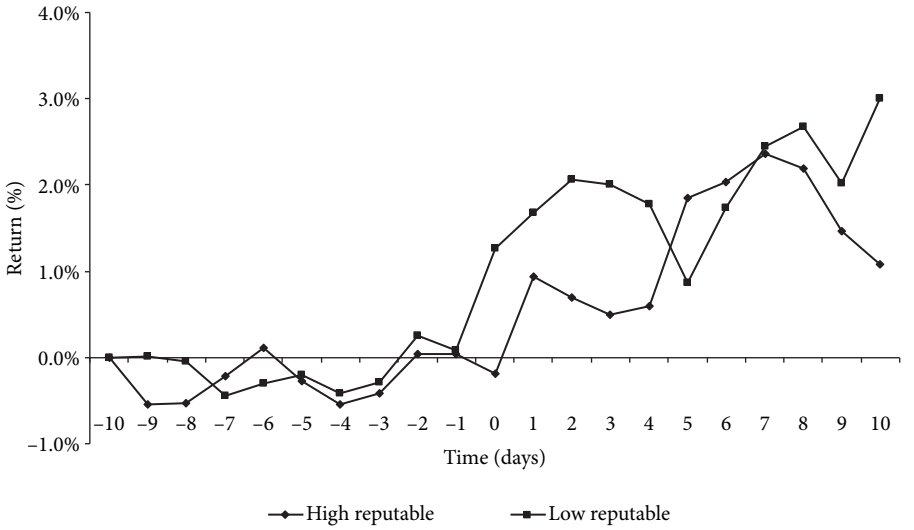

Figure 17.1 Cumulative abnormal returns (CARs) of PE targets for high- and low-reputable PE firms. This figure shows the mean percentage of CARs of bidders acquiring PE-backed target firms from ten days before and ten days after the announcement. The CAR for each acquisition is calculated by summing the difference between the acquirer's stock return and the return of the local market index of the bidder's home country.

returns ($CAR_{(-2,2)}$) using variables related to the role of PE firms and method of payments and several control variables. We organize this section by presenting the results in two panels in Table 17.4. First, we run several regression models by using the entire sample, including both PE-backed and non-PE-backed acquisitions. We aim to provide robust evidence for the effect of PE firms on asymmetry information problems of the bidders' equity along with the payment method of cash. Next we examine only PE-backed acquisitions.

Regressions for Entire Sample

Panel A of Table 17.4 reports the results from OLS regression analysis by using the total sample. Variables related to the role of PE firms are *PE-target*, a binary variable that takes the value of 1 for firms acquiring PE-backed private targets and 0 otherwise; *Cash*, another binary variable that takes the value of 1 for cash deals and 0 otherwise; and the interaction term between *PE-target* and *Cash*. If PE firms reduce (increase) the asymmetry information problem for the uncertainty on the value of private firms, PE-target should have a negative (positive) association with announcements returns. If the role of PE firms is related to cash payments, the gains from PE-backed acquisitions are lower when bidders pay the deals with only cash; hence we expect the coefficient of their interaction, *PE-backed * Cash,* to be negative.

In the regressions we use the following control variables used in prior empirical studies: bidder size (*Size*), dummies for acquisition deals paid with shares (*Shares*), a dummy for domestic acquisitions (*Domestic*), a dummy for corporate focus preservation (*Focused*), and a dummy for bidders located in the United Kingdom and the United States (*Bidder in UK_US*). Firm size has been reported to explain differences in announcement returns of acquiring firms (see Moeller et al., 2004). Chang (1998) and Fuller et al. (2002), among others, report that deal payment characteristics (payment in cash or shares) have an impact on announcement returns. Therefore we add a dummy for deals paid in shares. It seems prudent to include a dummy for bidders domiciled in the United Kingdom and the United States, since a larger part of our sample includes bidders from those countries. In all regressions we use dummies to control country and year fixed effects. We also include industry dummies in addition to the diversifying dummy to see if our results are sensitive to industry classifications.

Regressions 1, 2, and 3 in Panel A present regressions of abnormal returns, $CAR_{(-2,\,2)}$, on *PE-target*, *Cash,* and the interaction between these two variables. We have *Size* and *Relative size* as control variables in these first three and the other regressions. Consistent with the univariate results, the estimated coefficient of the dummy variable for firms acquiring PE-backed private targets, *PE-target*, is not significantly different from zero in the first two regressions, where we do not introduce the interaction variable. The variable *Cash* enters this regression with a positive and statistically significant coefficient at the 5 percent and 1 percent levels. This variable itself does not differentiate the method of payment between PE-backed and non-PE-backed targets, but the interaction variable between *Cash* and *PE-target* does. In regression 3 the estimated coefficient of the interaction variable, *PE-target*Cash*, is negative and significantly different from zero at the 1 percent level. This result together with the positive and significant estimated coefficient of *PE-target* indicates that there are still information asymmetry problems for PE firms that exit through cash deals. Regressions 4 and 5 provide similar results, controlled for other acquisition effects. Variable *Size* has a negative and significant coefficient, consistent with the finding of Moeller et al. (2004) that small bidders experience higher gains from acquisitions of private firms. The insignificant estimated coefficients of other control variables show that bidders of private targets are irrespective of geography (domestic vs. cross-border), industry relatedness (focused vs. diversified), location (United Kingdom or United States vs. other countries), and law of origin (civil vs. common law).

Regressions for PE-Backed Acquisitions

We now turn to the effects of the duration of ownership and reputation of PE firms on the bidders' gain. Panel B of Table 17.4 reports the results from the OLS regression analysis by using the sample containing bidder's CARs from acquisitions of only PE-backed private firms. The variable we use to measure the effect of the duration of ownership is *Earlyexit,* which is a binary variable that takes the value of 1 for

Table 17.4 OLS Regression Results

Panel A: Total Sample

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.057***	0.057***	0.051***	0.064***	0.071***	0.071***
	[0.019]	[0.018]	[0.018]	[0.019]	[0.027]	[0.027]
PE–target	0.006	0.006	0.020**	0.019**	0.020**	0.020**
	[0.007]	[0.007]	[0.009]	[0.009]	[0.009]	[0.009]
Size	−0.005***	−0.006***	−0.005***	−0.006***	−0.006***	−0.006***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Relative size	0.003	0.003	0.003	0.003	0.002	0.002
	[0.004]	[0.004]	[0.004]	[0.003]	[0.003]	[0.003]
Cash		0.010**	0.013***	0.008	0.008	0.008
		[0.004]	[0.004]	[0.006]	[0.006]	[0.006]
PE–target * Cash			−0.034***	−0.032**	−0.035***	−0.035***
			[0.013]	[0.013]	[0.013]	[0.013]
Shares				−0.008	−0.008	−0.008
				[0.006]	[0.006]	[0.006]
Domestic				−0.005	−0.005	−0.005
				[0.005]	[0.005]	[0.005]
Focused				−0.003	−0.002	−0.002
				[0.005]	[0.005]	[0.005]
Bidder in UK_US				−0.006	−0.007	−0.007
				[0.004]	[0.005]	[0.005]
Common law						−0.015
						[0.016]
Country dummies	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes
Industry dummies					yes	yes
Adjusted R^2	0.019	0.023	0.028	0.029	0.029	0.029
Observations	1124	1124	1124	1124	1124	1124

(*continued*)

Table 17.4 (continued)

Panel B: Only PE-Backed Targets

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	0.054	0.013	0.018	0.046	0.051	0.009	0.013	0.033	0.046
	[0.053]	[0.080]	[0.086]	[0.051]	[0.052]	[0.078]	[0.084]	[0.085]	[0.091]
Size	−0.005	−0.004	−0.004	−0.004	−0.004	−0.003	−0.002	−0.004	−0.004
	[0.006]	[0.006]	[0.007]	[0.006]	[0.006]	[0.006]	[0.007]	[0.006]	[0.007]
Relative size	0.042	0.046	0.045	0.043	0.045	0.046	0.048	0.042	0.045
	[0.030]	[0.031]	[0.031]	[0.031]	[0.033]	[0.033]	[0.034]	[0.031]	[0.033]
Earlyexit	0.004	0.003	−0.005	0.008	−0.018	0.006	−0.052	0.009	−0.051
	[0.018]	[0.019]	[0.047]	[0.018]	[0.022]	[0.018]	[0.053]	[0.018]	[0.053]
Reputation		0.015	0.013			0.013	0.014	0.019	0.018
		[0.018]	[0.020]			[0.018]	[0.020]	[0.017]	[0.019]
Earlyexit * Reputation			0.01				0.031		0.036
			[0.047]				[0.048]		[0.048]
Cash				−0.023	−0.037**	−0.022	−0.038**	−0.037*	−0.051**
				[0.015]	[0.016]	[0.015]	[0.016]	[0.021]	[0.023]
Early exit * Cash					0.054*		0.072**		0.066**
					[0.031]		[0.029]		[0.029]
Shares								−0.036	−0.035
								[0.022]	[0.022]
Domestic								−0.005	−0.01
								[0.015]	[0.014]
Focused								0.021	0.019
								[0.017]	[0.016]
Bidder in UK_US								−0.017	−0.015
								[0.017]	[0.017]
Common law								−0.056	−0.064
								[0.039]	[0.039]

Country dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes
Adjusted R^2	−0.012	−0.013	−0.026	0.008	0.035	0.005	0.035	0.026	0.049
Observations	100	100	100	100	100	100	100	100	100

Notes: The dependent variable is the cumulative abnormal returns (CARs) of acquirers for five days surrounding the announcement date (i.e., −2, +2). *PE-target* is a dummy variable that takes the value of 1 for PE-backed targets and 0 otherwise. *Size* is the natural logarithm of market value of bidders. *Relative size* is the ratio of deal value to the market value of bidder. *Cash* and *Shares* are dummy variables representing the deal financing by cash and stocks. *Bidder in UK_US* is the dummy variable to control for acquisitions by U.K. and U.S. firms. *Domestic* takes the value of 1 for domestic acquisitions and 0 for cross-border acquisitions. *Focused* controls industry diversification and takes the value of 1 if acquirer and target operate in the same industry. *Common Law* is a dummy variable representing the law of the origin for targets' country and takes the value of 1 if a target firm is located in a common law country and 0 if in civil law country. The following variables are used in Panel B, in which OLS regression results are presented using only PE-backed acquisitions. *Earlyexit* is a dummy variable that takes the value of 1 if PE firm exits within 25 months after buyout, 0 otherwise. *Reputation* is 1 if selling PE firm is ranked among top 25 in the list by *Private Equity International* in either 2007, 2008, or both, 0 otherwise. Robust standard errors are reported in brackets below the estimated coefficients. ***, ** and * denote significance at 1%, 5%, and 10%, respectively.

firms acquiring PE-backed private targets where PE firms exit within twenty-five months and 0 otherwise. The variable *Reputation* takes the value of 1 for PE firms ranked among the top twenty-five in the PEI list in either 2007, 2008, or both and 0 otherwise. We expect that the bidders of targets backed by PE firms involving early exit should have a positive association with announcements returns since PE firms would have to provide a discount for targets' value with early exits that indicates less involvement and lower expectation for future monetary benefits of PE firms. Reputation should have a negative effect on bidders' returns if a good reputation leads to better deal terms for PE funds. We use the interaction variable between these two variables, *Earlyexit*Reputation*, to control for a possible combined effect. If low-reputable PE firms have mostly early exit strategies, then the interaction should produce a positive and significant effect. The other possible combined effect would be between early exit and cash deals. It is highly likely that PE firms exiting early because of lower future monetary expectations would like to close the deal with the payment method of cash. In such cases they have to offer a higher discount. The interaction variable, *Earlyexit*Cash,* is used to measure this relationship.

We provide nine alternative regression models for the abnormal returns, $CAR_{(-2,\,2)}$, of the bidders acquiring PE-backed targets in Panel B of Table 17.4. Control variables are the same as those we used in Panel A. We don't find any individual effect of either early exit strategy or reputation. The evidence also shows that these two variables do not have a combined effect, meaning that early exit cannot be attributed to only low-reputable PE firms. However, the results for regressions 5 to 10 produce an important finding, which is the combination of early exit with cash. The estimated coefficient of the interaction variable, *Earlyexit*Cash*, is positive and

significant, indicating that the bidders' positive announcement returns are higher when they acquire private firms backed by PE firms exiting within twenty-five months and selling their firms for cash. This result is consistent with our argument that PE firms exiting earlier than usual sell their firms at a discount when they may lose their ability to control and have lower expectations for future monetary benefits. This evidence is also consistent with the liquidity hypothesis of Officer (2007), who argues that the cash deals for subsidiaries imply liquidity problems for corporate parents prior to the sale. Therefore the amount of the discount that PE firms need to provide to bidders becomes larger.

Conclusions

In this study we use a sample of acquisitions of 100 PE-backed and 1,024 non-PE-backed private targets located in fourteen Western European countries to examine the role of PE investments in bidders' announcement returns. Previous research reports the bidders' gain from acquisitions of private firms and argues that deals paid by either cash or equity for private targets reduce information asymmetry for the value of bidders' equity. Moreover liquidity constraints of parent firms cause a discount of the value of the private target. We find that the bidders' announcement returns are positive for both PE and non-PE deals, consistent with these two arguments. However, PE-backed targets produce lower positive bidder announcement returns than non-PE-backed targets do when deal value is paid by cash. This evidence indicates asymmetry information problems for the bidders acquiring PE-backed targets with cash payments.

We also study the reasons for lower announcement returns of PE deals with cash payments by examining the announcement returns of the bidders across acquisitions that involve only PE firms' exit. Specifically we focus on the reputation of PE firms and the duration of PE firms before exit. Low-reputable funds and PE firms exiting within twenty-five months are more likely to create higher announcement returns for bidders, indicating that losing control and liquidity needs may provide better deals to bidders. The early exit strategy of PE firms is confirmed by the combined effect with the payment method of cash. The results show that the bidders' positive announcement returns are higher when they acquire private firms backed by PE firms exiting within twenty-five months and selling their firms for cash. Overall the evidence suggests that PE firms create high bidders' gain when they exit earlier, which indicates low future expected monetary benefits, and are subject to liquidity problems.

Notes

1. Due to data limitation Officer's (2007) analysis for this issue focuses on only parent firms divesting unlisted subsidiaries. Such data to measure the need for liquidity by the owners of unlisted stand-alone firms are almost impossible to retrieve.
2. There are several mechanisms that are generally less common or uncommon to non-PE targets, such as buy and build, high leverage in combination with debt reduction, and cash flow optimization.
3. Our fourteen target countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and Sweden.

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CHAPTER 18

PRIVATE EQUITY ACTIVISM AND THE CONSEQUENCES FOR TARGETS AND RIVALS IN GERMANY

MARK MIETZNER AND DENIS SCHWEIZER

Private equity as a financing source increased dramatically in importance since the amendment to the "prudent man" rule governing pension fund investments in 1979. Prior to that date the Employee Retirement Income Security Act (ERISA) prohibited pension funds from investing in high-risk asset classes like private equity (Gompers and Lerner 2006). This change opened the door for pension fund investments, which subsequently started to invest in private equity.

In the past decades private equity financing showed a positive impact on both the company and macroeconomic levels (Tykvová 2006). On the company level, studies document several contributions of private equity investments, like the support of start-ups as described by Gompers et al. (2005), financing a companies' growth or strengthening their organizational structure (e.g., Hellmann and and Puri 2000), increasing their operational and financial performance (e.g., Jain and Kini 1995), or simply certifying their quality (e.g., Lin and Smith 1998). On an aggregated macroeconomic level, private equity has a positive impact on innovative activity (e.g., Kortum and Lerner 2000), on gross domestic product (GDP) (e.g., Gompers and Lerner 2001), and on employment (e.g., Wasmer and Weil 1994).

In recent years private equity investments on public capital markets have gained in significance and attention, media as well as academic, which is due, for

instance, to an increasing number of public-to-private transactions, initial public offerings of private equity funds like the Blackstone Group, or partial acquisitions of publicly listed companies.

The acquisition of minority stakes is often attended by a new investment strategy called "shareholder activism," which is increasingly followed by blockholders like private equity funds and hedge funds, among others.[1] Shareholder activism means that single blockholders themselves or in syndication with other investors seek to change a target company's business strategy, for example oppose a merger, redirect financial resources for R&D, change the financing policy (e.g., increase dividend payouts), trigger the initiation of share buybacks, change the firm's management by replacing the CEO, or change the composition of the board of directors.

Based on the agency-theoretical background provided by Jensen (1986) and Shleifer and Vishny (1986), activist shareholders take the opportunity to enhance shareholder value by reducing agency costs.[2] The separation of ownership and control causes agency problems when managers use investor funds to finance investment projects (Coase 1937; Jensen and Meckling 1976). Because managers control the capital, they may "expropriate" their investors if the company does not impose a concentrated ownership structure. Numerous studies have addressed different kinds of expropriation, such as fringe benefits (Burrough and Helyar 2004), expanding a company beyond its optimal point, finance projects that maximize managers' utility (Jensen 1986; McConnell and Muscarella 1986), and diversifying mergers (Lang and Stulz 1994).[3] One solution for the agency problems comes from Grossman and Hart (1980) and Shleifer and Vishny (1986), who suggest that large shareholders take on an active monitoring role. However, blockholders are not homogeneous: they differ in their incentives and capabilities to become active.

Consequently two questions arise: Is the change in ownership structure by an activist blockholder (private equity funds) value-enhancing? If so, what are the value drivers behind it?

Prior research has analyzed the effectiveness of large shareholders' monitoring activities as well as their ability to directly influence corporate policy. While large investors can be very effective in solving agency problems in theory, empirical research finds ambiguous evidence of successful changes in corporate policy (see, e.g., Cronqvist and Fahlenbrach 2009). However, Cronqvist and Fahlenbrach argue that large shareholders differ from each other, and show that changes in investment and financial policy as well as in operations are greater in the presence of specific groups of active blockholders. They conclude that it is necessary to consider large and active shareholders, but it may be even more important to determine who they are. Given blockholders' distinctive ability to change corporate policy, we believe capital markets should react to engagements of potential active blockholders, such as private equity managers who are supposed to have the capabilities to reduce agency costs and thereby enhance value.

Furthermore private equity managers spend considerable resources gathering information about the target in advance of the block purchase, but only if the transaction increases expected wealth. Thus the investment should reflect investors' private information about the target firm, but it may also convey valuable information

about the industry to a larger public. For that reason one should expect that problems arising from the separation of ownership and control not only will affect a single target firm, but has an impact on the entire industry as well (due to, e.g., information spillover). Thus the market may expect industry rival firms to experience parallel gains. This may be attributed to an increase in takeover probability for the rival firms, but could also result from positive spillover effects stemming from corporate governance improvements in target firms. That is what we term "the information-signaling hypothesis": the expectation of positive valuation effects on rival companies upon the announcement of a block purchase in the target firm.

Consequently our third research question asks whether industry rivals for private equity targets are also affected by potential activism campaigns in target companies. We expect this to be relevant particularly for private equity funds since these active investors have a sufficiently long investment horizon and typically follow an investment strategy whose objective is to change the strategic agenda of its portfolio companies.

To provide an answer to these questions, we hand-collected a unique data set of 171 German companies that were targeted by private equity investors between 1993 and 2009. Using a matching procedure based on industry classification codes and size and market-to-book matches, we identify 201 industry rivals. We then apply standard event study methodology to analyze whether the engagements of a specific active investor is associated with different short-term valuation effects for targets and industry rivals. We also relate stock returns to several corporate characteristics and market variables in order to find out what determines the valuation effects. Because we expect the acquisition of a significant ownership claim by a private equity fund to affect an entire industry, we additionally examine long-term target stock performance by calculating benchmark-adjusted Fama-French buy-and-hold abnormal returns (BHARs).

The rest of this chapter proceeds as follows. First we differentiate among new institutional investors (sovereign wealth funds, hedge funds, private equity funds) and traditional shareholders with respect to their perceptions, skill sets, and ability to become successful active shareholders. We also review prior empirical studies. Subsequently we describe our data set and empirical methodology, followed by our results. The chapter ends with a brief conclusion.

The Potential of Institutional Investors to Become Successful Active Shareholders

Blockholders usually do not act homogeneously, as many models assume; rather they differ in their incentives and capabilities to become active. Therefore this section focuses on different types of investors, emphasizing their motivations and

their ability to become successful active shareholders. First, we classify the investors into two groups: (1) traditional institutional investors like banks, mutual funds, and pension funds, and (2) new institutional investors like hedge funds, private equity funds, and sovereign wealth funds. Second, we highlight the institutional differences between hedge funds and private equity funds and the expected consequences for successful activism strategies in Germany.

Traditional Institutional Investors: The Role of Banks, Mutual Funds, and Pension Funds

Useem et al. (1993) investigate differences in shareholder activism by institutional investors and find they are heterogeneous in their behavior even if they are of the same type. But what motivates some institutional investors to be active, while others are not, and why are some investors successful, while others fail? (See Mietzner and Schweizer 2012 for a comprehensive discussion.)

We find that banks usually hold substantial amounts of corporate equity and debt (Schmidt 2004). Furthermore Casasola et al. (2004) argue that banks often have the required analytical skills, technical expertise, long-term business relationships, and access to superior information about firms. Therefore, in general, they meet the requirements to become active shareholders.

However, Charkham (1994) notes that different business units of a bank often do not share information because of regulatory constraints against conflicts of interests (called "Chinese walls"; Calomiris and Singer 2004). Moreover banks may not want to jeopardize their chance for future business when they pursue activism strategies (Harris and Raviv 1990). Thus banks may be less likely to become active shareholders. For these reasons one can conclude that banks have the appropriate skill sets but may prefer not to actively influence corporate policies (Cronqvist and Fahlenbrach 2009).

In contrast to banks, mutual funds and pension funds do not face most of these conflicts of interest. However, they may not become active shareholders for five main reasons: (1) the substantial costs of informing themselves about a single portfolio company; (2) the lack of incentives to become active if, for example, a fund has below-average portfolio weights in a target compared to their peer group funds (called the "free-riding" problem); (3) the lack of direct additional compensation for activist efforts (performance fee); (4) certain conflicts of interest; and (5) regulatory or political constraints.[4] (See, e.g., Kahan and Rock 2007 for a detailed discussion.)

Overall, pension fund as well as mutual fund managers often engage in behind-the-scenes discussions with board members and managers to achieve modest corporate governance changes rather than using aggressive activism (Carleton et al. 1998). Kahan and Rock (2007) note that pension funds aim for similar small corporate governance changes in several companies. This in turn should have only a marginal impact on a company's corporate policy.

"New" Institutional Investors

Previous evidence on the engagement of new institutional investors as blockholders indicates that target firm shareholders receive substantial positive stock returns in response to the announcement of the change in the ownership structure. Brav et al. (2008), Klein and Zur (2009), Clifford (2008), Boyson and Mooradian (2007), and Greenwood and Schor (2009) report average excess returns to target firms of about 5 percent when a hedge fund becomes a blockholder in U.S. firms. Mietzner and Schweizer (2012) find comparable positive announcement returns for German hedge fund targets. Similar announcement returns are noted when the acquirer of voting rights is a private equity fund in the United States (Klein and Zur 2009) or Germany (Mietzner and Schweizer, 2012; Achleitner et al. 2011).[5] Comparable to hedge funds and private equity funds, the announcement that a sovereign wealth fund has acquired a block of voting rights is likewise followed by significant positive excess returns to target firms (see, e.g., Fotak et al. 2008; Mietzner et al. 2009, 2010). Table 18.1 summarizes the main findings of the previous studies.

The sources of these gains are extensively discussed in the literature. As we noted earlier, an alignment of interests between managers and shareholders as well as an increase in monitoring activities of blockholders can serve as mechanisms for solving the agency problem (Grossman and Hart 1980; Shleifer and Vishny 1986).

In comparison to the previously discussed traditional institutional investors, sovereign wealth funds as well as private equity and hedge funds have the great advantage that they are not affiliated with other institutions and have a higher regulatory freedom and therefore can act more efficiently in pursuing active investment strategies.

In general, sovereign wealth funds are government-controlled investment vehicles that are typically funded by commodity export revenues, the transfer of assets directly from official foreign exchange reserves, or in some cases by government budget surpluses or pension surpluses. They have recently gained media attention not only because of their asset size, but also because of their extremely rapid growth rates and in general their lack of transparency (Fotak et al. 2008).

Furthermore some state funds have announced plans to decrease their conservative holdings (i.e., government bonds) in favor of investments like public equity with higher risk-and-return profiles (Gilson and Milhaupt 2008; Chhaochharia and Laeven 2008). However, investments in foreign public equity have repeatedly raised concerns, such as the fear of industrial espionage (technology tunneling) or geopolitical threats (see, e.g., Rose 2008). Moreover state funds like Singapore's Temasek have announced that they plan to play a more "active role" in their investments.

Sovereign wealth fund investments in firms are often characterized by an acquisition of a significant block of voting rights, which theoretically enables them to monitor management effectively in general. Therefore one could expect that sovereign wealth fund managers are successful active shareholders, but the empirical evidence is mixed (see, e.g., Fotak et al. 2008; Mietzner et al. 2009, 2010). Nevertheless they might play an important role in the market for corporate control in the future.

Table 18.1 Summary of Studies of Returns to New Institutional Investors

Author	Type of Investor	Sample Description	Summary of Findings
Boyson and Mooradian (2007)	Hedge funds	397 target firms in 1994–2005 in the U.S.	Strong evidence that hedge fund activists improve both short-term stock performance and long-term operating performance of their targets. Results imply that hedge funds can facilitate long-lasting changes in corporate governance, cash flows, and operating performance that benefit target firm shareholders and hedge fund investors alike.
Mietzner and Schweizer (2012)	Hedge funds and private equity funds	67 (159) target firms in 1993–2007 by hedge funds (private equity funds) in Germany	Positive short-term performance of about 5% following an announcement that a hedge fund or private equity manager acquired at least 5% of a company's voting rights. Variables proxying for agency costs explain the market reaction for our private equity subsample. Considering the long-term stock price performance buy-and-hold abnormal returns are negative for both samples.
Clifford (2008)	Hedge funds	788 target firms in 1998–2005 in the U.S.	Companies that are targeted by hedge funds for active purposes typically earn larger, positive abnormal returns than firms targeted by hedge funds for passive purposes. Activists' targets experience an excess return of 3.44% surrounding the filing date, while firms targeted by passivists gain only 1.74%. Regarding their long-term performance, firms targeted by activists experience increases in operating performance (ratio of net income to assets [ROA]) following the acquisition of a minority stake. These operational improvements appear to be driven by the divestiture of underperforming assets.
Brav et al. (2008)	Hedge funds	1,059 target firms in 2001–2006 in the U.S.	Activist hedge funds propose strategic, operational, and financial remedies and attain success or partial success in two-thirds of the cases. Hedge funds seldom seek control and in most cases are nonconfrontational. The abnormal return around the announcement of activism is approximately 7%, with no reversal during the subsequent year. Target firms experience increases in payout, operating performance, and higher CEO turnover after activism. The analysis provides important new evidence on the mechanisms and effects of informed shareholder monitoring.

Fotak et al. (2008)	Sovereign wealth funds	Time period of 1986–2008 around the world	Analyzes investments of 35 large SWF in listed and unlisted equity, real estate, and private equity funds, with the bulk of investments being targeted in cross-border acquisitions of sizable but noncontrolling stakes in operating companies and commercial properties around the world. The vast majority of SWF investments involve privately negotiated purchases of ownership stakes in underperforming firms. A significantly positive mean abnormal return of about 0.9% around the announcement date that a SWF has acquired an equity stakes in publicly traded companies can be found. However, one-year matched-firm abnormal returns of SWFs average 15.49%, suggesting equity acquisitions by SWFs are followed by deteriorating firm performance.
Mietzner et al. (2009)	Sovereign wealth funds (SWF)	200 SWF target firms in 1987–2009	Documents that SWF target firms are more profitable, pay higher dividends, have a higher financial stability than their industry peers, and experience an abnormal return of up to 4.02% upon announcement. No evidence is provided that SWF engagement has an impact on operating or market performance.
Klein and Zur (2009)	Hedge funds and entrepreneurial activists	151 (154) target firms in 2003–2005 by hedge funds (private equity funds) in the U.S.	The three main parallels between the groups are short-term market reactions, a further significant increase in share price for the subsequent year, and the activist's high success rate in gaining original objective. The two main differences are the types of companies each group targets and the activist's postinvestment strategies. Hedge funds target more profitable and healthy firms than other activists. Afterward hedge funds reduce the target's cash holdings by increasing its leverage and dividends paid. In contrast, other activists lower the target's capital expenditures and research and development costs.

(*continued*)

Table 18.1 (continued)

Author	Type of Investor	Sample Description	Summary of Findings
Greenwood and Schor (2009)	Hedge funds	784 target firms in 1993–2006 in the U.S.	Explains positive short-term capital market reactions by the ability of activists to force target firms into a takeover. The announcement returns and long-term abnormal returns are high for the subset of targets that are acquired ex-post, but not detectably different from zero for firms that remain independent eighteen months after the initial filing. Firms that are targeted by activists are more likely to get acquired than those in a control sample. The portfolios managed by activist investors performed poorly during a period in which marketwide takeover interest declined.
Achleitner et al. (2011)	Private equity	48 target firms in 1998–June 2007 in Germany	Private equity investors generate positive wealth effects for target shareholders of 5.90% around the event day. In addition the wealth effects of private equity investor involvement in Germany are positively related to the target's tax liabilities and degree of undervaluation and negatively related to the target's leverage and the shareholding of the second largest ownership block. The latter effect can be interpreted as a supplementary monitoring effect of the management or a monitoring effect of the largest shareholder through which private benefits of control are reduced.
Mietzner et al. (2010)	Sovereign wealth funds	35 financial service targets in 1995–2008	Although prior empirical studies document the value destruction of M&A activity in the banking industry, this study documents a significant positive announcement effect of up to 5.66% but a long-run insignificant stock price reaction to minority stake acquisitions by private equity funds in exchange-listed companies. This finding seems to be a convincing indicator that SWF are expected to reduce agency costs in financial services firms and thereby to generate sustainable additional value to the shareholders.

In contrast to sovereign wealth funds, managers of private equity funds or hedge funds are highly incentivized and have the appropriate capabilities to become successful active shareholders. We first discuss characteristics that both new institutional investors have in common and then discuss how they differ. Concluding, we want to show what the expected consequences are.

Hedge fund as well as private equity managers have negotiated attractive performance-based compensation schemata with their investors. On average they charge a fixed annual management fee of 2 percent to cover the funds running costs, while the performance fee of 20 percent (when the performance is above a specified hurdle rate) provides incentives for fund management (see, e.g., Hennessee 2007; Metrick and Yasuda 2010). These compensation structures align the interests of fund management with the interests of its investors and ensure that fund management is highly motivated to pursue shareholder interests.

Furthermore hedge funds and private equity funds are in general not affiliated with banks or insurance companies. The latter might wish to retain the potential for future business with the firms in question and therefore restrict the fund management in their activism efforts. For that reason one can conclude that conflicts of interest are much lower compared to, for instance, mutual funds (Kahan and Rock 2007; Davis and Kim 2007). Particularly in Germany this argument becomes essential as the mutual funds market is dominated by investment companies affiliated with banks and insurance companies.

Both new institutional investors are less restricted in their investment behavior compared to mutual funds and insurance companies. Since hedge funds are not registered under the U.S. Investment Company Act of 1940, they are not restricted from short-selling securities or leveraging. Thus they can obtain large blocks of voting rights more easily than traditional investors can. Furthermore they do not have to disclose their holdings, investment strategies, short-selling positions, or leverage ratios. Private equity funds and hedge funds exhibit similar advantages in this respect, except for the ability of private equity funds to use derivatives (Black and Hu 2007; Christoffersen et al. 2007).

Summarizing the argument, hedge funds as well as private equity managers have several advantages over traditional institutional investors to become successful active investors. Nonetheless hedge funds and private equity funds differ from each other on several points.

Both investment vehicles have a different funding structure and therefore a different life cycle: hedge funds are typically structured as open-ended funds, whereas private equity funds have a specified lifetime. In the life cycle of a private equity fund, the first stage is fundraising and seeking new capital from outside investors. Thereafter the capital committed by the limited partners is called whenever the general partner, who is responsible for day-to-day management of the fund, finds a promising investment opportunity or charges management fees. The last stage is the exit of the private equity fund from portfolio companies in order to distribute returns to investors. This process of generating negative revenues (e.g., fees or restructuring costs in the beginning and high expected gains from successful exits

at fund end) is known as private equity's "J-curve." This funding structure enables private equity managers to focus on longer investment horizons and provides a wide range of investment strategies.

Furthermore the private equity management is also not subject to short-term redemption risk. In addition since private equity funds are focused on one activity, namely investments of equity capital in certain companies, their management encompasses not only managers with substantial financial expertise but also personnel with strong business skills and abilities. Of course, these abilities are important in order to develop a deep knowledge of the business model of a target company, which in turn is a prerequisite for improving the company's value.

In contrast, hedge fund managers may face significant capital withdrawals after reporting negative performance for several subsequent months and low or no new cash inflows (Getmansky 2005). They may also face the problem of losing their best employees if fund performance is substantially below the high-water mark. Of course, after the initial investment there are certain lock-up periods for the committed capital of these investors. However, after this period investors can redeem their investment on a relatively short-term basis. On average they have to wait four months until they can take back their money. Therefore hedge fund managers have to be more short-term-oriented compared to private equity managers to avoid a reduction in the funds' capital and to preserve liquidity (Agarwal et al. 2009). They face the threat of illiquidity when they acquire a large share position in a target company that they cannot sell within a short time period. Hence hedge funds prefer investments with which they can achieve a fast turnaround.

For that reason they try to identify firms that are undervalued and, even more important, in which they have the means of establishing a strong shareholder orientation in the short run. Only such a strategy allows them to liquidate their holding positions on the short term at low cost. However, this also requires investment professionals with substantial financial expertise. For that reason hedge funds mainly recruit employees with a strong background in financial markets. Given their business model and their organizational setup, the financial expertise of its management is a precondition of success. And this should be reflected in the type of activism they exhibit toward their portfolio companies: strong shareholder orientation and aggressive behavior on the product markets to achieve quick gains (increasing the dividend payouts, etc.).

After analyzing the institutional details of the different types of new institutional investors one can conclude that private equity funds have the highest probability to become successful active shareholders, since they can operate on a long-term-oriented basis and have the broadest set of activism strategies.

Against this background, our central hypothesis is that the engagement of a private equity investor reveals valuable information about the target company, and that at least some of this information will also apply to rival firms. On the one hand, the engagement may signal new information about the future prospects of the industry. On the other hand, changes implemented by the private equity manager may affect firm competition on an industrywide basis in two ways: first, the

probability increases that the industry rival firms will become future targets; second, the market may perceive the agency problem as industrywide and the engagement may induce industry rival firm managers to improve performance to avoid becoming the next target. Thus announcements of this particular change in ownership structure should generate market valuation effects for industry rivals. In testing this hypothesis we assume that a positive intra-industry effect supports the information-signaling hypothesis.

Data and Methodology

We collected data from four primary sources for our analysis. We obtained time series data (i.e., daily closing prices and consolidated trading volumes) for all firms in our sample and the CDAX index from Thomson Financial DataStream. For accounting data, we used the Thomson Financial Worldscope database to obtain information for the two fiscal years prior to the announcement until three years after, when available. In accordance with prior research based on Fama and French (1992), we assign all accounting variables for the fiscal year-end in year $t-1$ to announcements between July and June of year $t+1$. The Thomson Financial Mergers and Acquisition database is used for the identification of mergers and acquisitions (M&A) transactions. Further, we gathered information from the database of the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht [BaFin]) to identify disclosures of shareholders who owned 5 percent or more of a company's voting rights from 2001 through August 2009.[6] Investors are required by the German Securities Trading Act (§§ 21 et seq.) to disclose an acquisition of at least 5 percent of the voting rights of any German publicly traded company no later than nine days after the transaction. These requirements ensure that the database can be regarded as a complete collection of transactions. While this database is comparable to the 13G filings in the SEC Edgar database, it also provides information on direct holdings, as well as cumulative voting rights that investors acquire. Therefore not only direct stakes of blockholders are included, but also chains of direct stakes, for example, due to joint control (see Becht and Böhmer 2003).

Private Equity Target Sample Construction

The challenge for the private equity subsample construction was the identification of the private equity–related transaction in the BaFin database, since private equity fund managers often structure their transaction via so-called special purpose

vehicles (SPVs) or make use of complex holding structures. Hence it is possible that a private equity fund acquisition might be filed, for example, by an SPV that is ultimately owned by the fund; however, because the SPV has a different name it is difficult to trace it back to the fund.

In order to overcome this problem we examined the Thomson Financial Mergers and Acquisition database and collected a raw sample of 31,496 M&A transactions in which the target is located in Germany. Next we applied a two-step approach to identify the transactions in which the acquirer is a private equity fund:

1. We compiled a complete list of private equity funds from different data sources, such as member lists of investment associations (Bundesverband Alternative Investments and Bundesverband Deutscher Kapitalbeteiligungsgesellschaften), public rankings of private equity funds, and Thomson One Banker "Private Equity Flag." We removed the legal form identifier from the names, reducing them to their distinctive body (i.e., "The Blackstone Group" was reduced to "Blackstone") and deleted nondistinctive terms such as "Group."

2. We employed a text-matching program procedure to match this list with the acquirer's name, the acquirer's immediate parent's name, the acquirer's ultimate parent's name, and the deal description (deal synopsis). Finally, we added deal descriptive terms like "leverage buyout" or "LBO" to our search criteria for the deal synopsis.

After this two-step approach the initial sample encompassed 891 transactions. We reduced the sample further by deleting double entries and nonpublicly listed target companies. To avoid confounding events, we excluded all private equity disclosures that were within three months subsequent to a prior announcement of a 5 percent shareholding in that company by any other investor. Then we visually inspected every match to ensure accuracy. In the last step we conducted an individual judgment and verified this judgment with practitioners, which reduced our sample to 171 transactions (see Figure 18.1). We validated our sample by repeating

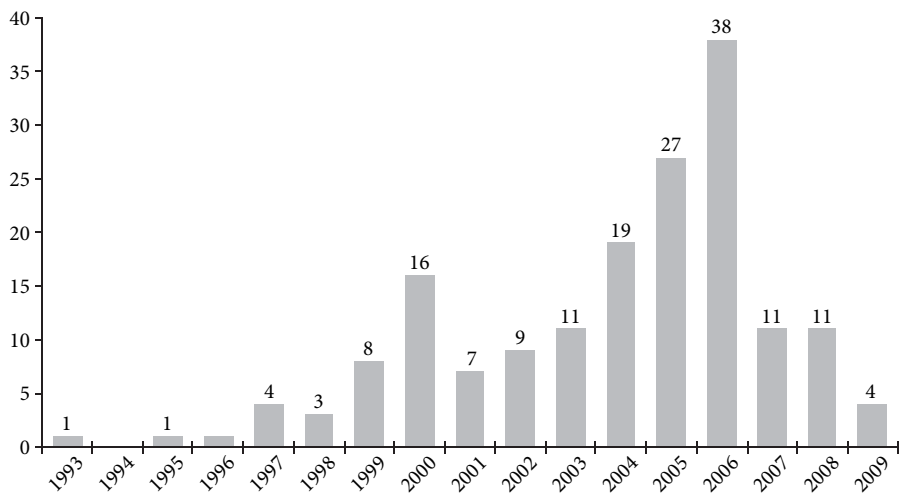

Figure 18.1 Distribution of hedge fund and private equity target events, 1993–2009.

the text-matching program procedure for the complete list with the disclosures provided by the BaFin database and conducted a research of news articles on LexisNexis for publicly listed companies in Germany, but did not find further events.

To avoid potential biases from illiquid stocks, we also excluded all companies with absolute daily returns of less than 0.001 percent on more than 30 percent of the trading days within the 200 days prior to the announcement. Finally, we were left with a total of 125 private equity target firms listed in Germany between 1993 and 2009. Notice that for the matching procedure the greater sample of 171 transactions is used since illiquidity in the target company does not necessarily have an impact on rival reaction.

Construction of Industry Rival Portfolio to Private Equity Targets

We first gathered all active, dead, and delisted firms contained in the Thomson Financial DataStream database to obtain a survivorship-bias-free rival universe. To compute the wealth effects of private equity investments on a target firm's competitors (rivals), we employed a three-step procedure: First, we formed an equally weighted portfolio of all firms with the same four-digit standard industrial classification (SIC) code as the target firm.[7] Second, because this constitutes a broad classification of industry rivals, we identified all firms with market value of equity between 50 and 250 percent of the market value of equity of the target firm. Third, only firms with a book-to-market ratio close to our target firm were selected. Finally, illiquid stocks were removed, and also rivals were deleted which themselves became targets over our sample period.

Estimation of Valuation Effects

Market reactions to acquisition announcements of voting rights by private equity investors provide an estimate of the value creation that the market expects to be associated by the new blockholders. We apply the standard event study methodology of Brown and Warner (1985) by using the modified market model and calculating the cumulative abnormal returns for a τ day event window, as follows:

$$CAR_{i,\tau} = \sum_{t_0=t_0}^{\tau} \left(R_{i,t} - \alpha_i - \beta_i \cdot R_{CDAX,t} \right)$$

where $R_{i,t}$ is the return of firm i at time t,α_i and β_i are estimates from an ordinary least squares regression during the estimation period (200 days), and $\text{RCDAX},_t$ is the market return (CDAX) at time t. We use a standard t-test statistic to draw statistical inferences for the different event window cumulative average abnormal returns (CAARs).[8]

In Germany investors are required by law to disclose an acquisition of voting rights no later than nine days after the transaction. As a lagged disclosure might cause a bias, we based the subsequent cross-sectional regression on event windows (–5; 4) and (–5; 5) and estimated the sensitivity of market reactions to transaction, firm, and industry characteristics.[9] We calculated the t-statistics of our cross-sectional regressions using White's (1980) heteroskedasticity-consistent standard errors.[10]

To detect whether the capital markets distinguish between competitive and noncompetitive product market environments, the respective industry concentration was calculated using the Herfindahl-Hirschman Index:

$$HHI_{j,t} = \sum_{i=1}^{N_j} s_{ijt}^2$$

where s_{ijt}^2 is the market share of firm i in industry j at announcement day t, and N_j the number of firms in industry j. We again used the four-digit SIC code provided by Thomson Worldscope.

In order to detect the long-horizon impact of the acquisition of ownership claims by private equity investors, we calculated 150-day, 200-day, 250-day, and 300-day buy-and-hold abnormal returns to measure the performance of our target and industry rival portfolios. We estimated the BHAR for each company over T days:[11]

$$BHAR_{i,T} = \left[\prod_{t=1}^{T}(1+R_{i,t})\right] - \left[\prod_{t=1}^{T}(1+\alpha_i(R_{m,t}-R_{f,t})+\beta_i SMB_t+\gamma_i HML_t\right]$$

where $R_{i,t}$ is the return of rival i at time t, $R_{f,t}$ is the risk-free rate, and $R_{m,t}$ is the market-return. *SMB* is the difference between returns on a portfolio of small and big stocks; *HML* is the difference between returns on a portfolio with high and low book-to-market firms. Since historical data on the *SMB* and *HML* portfolios are rarely available for Germany, we followed Pham (2007), and Faff (2003) and created proxies for these two Fama-French factors by using style indices for large and small caps. Specifically we used the MSCI Germany Value and Growth indices for small and large caps, the MSCI Germany Value and MSCI Germany Growth Index for low and high book-to-market firms, and the MSCI Germany Standard Index as market reference.

Empirical Results

Differences in Target and Industry Rival Firm Characteristics

As a first step, we investigate the characteristics of target firms in comparison to their industry rivals. The objective is to find out how target firms and industry

rivals differ from each other and how the characteristics of the target firms changed relative to their rivals after the purchase of voting rights by a private equity manager. To be more precise, we compare the targets' and rivals' median of certain firm characteristics from year 2 prior to the investment in the target company until year 3 after the acquisition on a yearly basis in order to detect differences between target and industry rival companies in the cross-section and to trace changes over time. The results are shown in Table 18.2.

We find that cash holdings are significantly lower for the target companies, but they do not decrease over time after the acquisition. We do not observe an increase in the dividend payments in the aftermath of a private equity investment. It seems that target firms increase leverage since the equity ratio of the target firms decreases over time relative to their rivals (Row 8 of Table 18.2: Equity % Total Capital); however, real investment activity is not reduced significantly (Row 9). Private equity firms also typically invest in larger firms (Row 13: Total Assets), and, at least in the first two years after investment, their engagements are quite profitable if one compares the development of the total market capitalization to the peer firms. However, they quite often invest in firms with concentrated ownership structures, as can be seen from the fraction of closely held shares (Row 15: %Closely Held Shares) and acquire a substantial percentage of the shares in the target company. Thus the first impression from the analysis points toward a fairly long-term strategy of private equity targets in dissolving agency conflicts. They increase the leverage to address free cash flow problems; however, this is an attractive alternative only when the expected financial distress costs of the firm are not too large and requires a long-term horizon, which could be undermined by short-term aggressive behavior in the product market.[12] Moreover the increase in real investment indicates that the long-term perspective of the industrial sector in which the target firm is embedded seems to be a profitable investment opportunity. Both arguments support the information-signaling hypothesis that the announcement of a private equity investment should benefit the target firm's competitors.

Short-Term Valuation Effects on Targets and Industry Rivals

This section presents the short-term valuation effects on the initially targeted companies in response to the acquisition of a 5 percent ownership stake by a private equity fund as well as for an industry rival portfolio. In the previous sections we hypothesized that the announcement is associated with a positive abnormal return due to the opportunity that agency costs could be reduced and/or the business strategy of the target company could be enhanced by the new blockholder. Further, we proposed that the information-signaling hypothesis is able to explain the short-term valuation effects for targets' horizontal rivals. Note that the information-signaling hypothesis predicts positive market reactions.

Table 18.2 Differences in Target and Rival Firm Characteristics Relative to Private Equity Activism

	Targets Median						Rivals Median						Difference					
	t-2	t-1	to	t+1	t+2	t+3	t-2	t-1	to	t+1	t+2	t+3	t-2	t-1	to	t+1	t+2	t+3
Cash Holdings	0.35	0.31	0.35	0.37	0.61	0.4	1.78	2.2	2.95	1.73	1.24	1.2	−1.431***	−1.882***	−2.603***	−1.357***	−0.632**	−0.793**
Cash/Total Liabilities	0.08	0.08	0.08	0.11	0.12	0.14	0.15	0.12	0.11	0.11	0.09	0.08	−0.062**	−0.038**	−0.028	0.003	0.034	0.064*
Cash/YrEndMarketCap	0.09	0.11	0.10	0.13	0.13	0.16	0.11	0.12	0.12	0.12	0.13	0.12	−0.021	−0.014	−0.025	0.007	−0.004	0.035**
Current Ratio	1.55	1.44	1.68	1.67	1.58	1.55	1.4	1.46	1.4	1.37	1.46	1.54	0.147	−0.024	0.283	0.301	0.118	0.01
Dividend Payout per Share	46.30	43.58	35.80	41.92	31.57	34.38	48.73	43.83	43.61	45.45	46.85	43.23	−2.434	−0.251	−7.814	−3.531	−15.279*	−8.856
Earnings Per Share	0.3	0.16	0.33	0.33	0.11	0.16	0.1	0.14	0.16	0.2	0.2	0.15	0.196**	0.02	0.167	0.13	−0.089	0.006
EBITDA/YrEndMarketCap	0.16	0.16	0.19	0.14	0.17	0.16	0.11	0.11	0.13	0.14	0.13	0.15	0.052***	0.046***	0.057**	−0.004	0.033	0.006
Equity % Total Capital	75.93	78.26	74.46	74.46	67.55	63.36	86.67	88.13	86.7	88.41	85.38	82.63	−10.74***	−9.87***	−12.24***	−13.95***	−17.84***	−19.26***
Investment	0.24	0.21	0.26	0.24	0.25	0.23	0.29	0.34	0.38	0.31	0.25	0.28	−0.053*	−0.133***	−0.113***	−0.070*	0.001	−0.048
Market to Book Value	1.55	1.87	1.62	1.81	1.96	1.33	1.46	1.52	1.52	1.52	1.51	1.36	0.085	0.35	0.1	0.295	0.45	−0.025
Price Earnings Ratio	13.93	12.54	10.05	8.68	6.4	7.92	13.26	10.48	9.44	9.46	10.13	8.64	0.667	2.057	0.61	−0.786	−3.729*	−0.726
Return On Asset	4.25	3.11	4.27	3.16	3.21	4.34	3.29	3.67	3.79	3.71	3.84	3.49	0.963	−0.552	0.478	−0.556	−0.634	0.851
Total Assets	137.7	145	139.6	166	194.8	173	51.7	57.8	69.4	75.1	85.2	87.4	85.88***	87.19***	70.18***	90.93***	109.59***	85.54***
YrEndMarketCap	125.3	108.5	91.5	110.9	120	82.7	42.6	40.6	40	40.9	36.5	38.6	82.74***	67.86***	51.54***	70.07***	83.49***	44.16**
%Closely Held Shares	51.8	56.05	58.35	62.67	66.22	64.53	55.59	54.78	53.64	51.76	58.07	55.62	−3.791	1.266	4.712	10.908***	8.146***	8.907**

Notes: This table shows the firm characteristics of targets of private equity activism compared to their rivals. We winsorize each of the variables at the top and bottom to eliminate the effects of outliers. *Cash holdings* is cash and short-term investments over lagged net property, plant, and equipment. *Cash/Total Liabilities* equals *Cash holdings* divided by *Total Liabilities*, which represents all short- and long-term obligations expected to be satisfied by the company. *Cash/YrEndMarketCap* equals *Cash holdings* divided by *YrEndMarketCap*. *Current Ratio* is calculated as current assets over current liabilities. *Dividend Payout per Share* is measured as dividends per share divided by earnings per share. *Earnings Per Share* represent the earnings for the 12 months ending the fiscal year of the company. *EBITDA/YrEndMarketCap* is defined as EBITDA (which is calculated by taking the pretax income and adding back interest expense on debt and depreciation, depletion, and amortization and subtracting interest capitalized) divided by *YrEndMarketCap*. *Equity % Total Capital* = (*Common Equity/Total Capital*)* 100. *Investment* is capital expenditures over lagged net property, plant, and equipment. *Market To Book Value = Market Price-Year End/Book Value Per Share*. *Price Earnings Ratio = Market Price-Year End/Earnings Per Share*. *Return on Asset* = (net income before preferred dividends + ((interest expense on debt-interest capitalized)* (1-tax rate)))/last lagged total assets * 100. *Total Assets* is defined as the value of a company's book assets. *YrEndMarketCap* is calculated as *Market Price-Year End* Common Shares Outstanding. % Closely Held Shares* is a measure for insider ownership and is defined as *(Number of Closely Held Shares/Common Shares Outstanding)* 100.* ***,**, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

When we first focus on the market reaction to the announcement that private equity investors have reached the level of becoming active blockholders in a target company we find positive announcement returns (see Figure 18.2). These short-term capital market reactions are in line with previous findings (see, e.g., Mietzner and Schweizer, 2012; Klein and Zur 2009) and are statistically significant (compare Table 18.3).

The results in Table 18.3 strongly support our hypothesis of a statistically significant positive market reaction to purchases of at least 5 percent of voting rights in the target companies for all chosen event windows. The ten-day average cumulative abnormal return (CAR) (–5; +4) shows the highest average wealth effect of 7.61 percent. The results in Table 18.3 are not only statistically significant but are also robust against several specifications and testing procedures and are in line with the results of Klein and Zur (2009) and Achleitner et al. (2011).

Complementary to this, the stock price effects for industry rivals of private equity targets cause significantly positive market reactions of on average 1.78 percent (–5,+4) to 3.9 percent (–20,+10; see Figure 18.3 and Table 18.4).[13] This outcome indicates that there are information spillover effects from the targets to the industry peers and that information-signaling effects are prevalent within the private equity rival portfolio, as predicted. This outcome is interesting in light of corporate governance theories, because it indicates that acquisitions of at least 5 percent voting blocks also affect a target firm's direct competitors.

Cross-Sectional Regression Analysis of Rivals' Short-Term Valuation Effects

Our evidence of substantially positive abnormal returns triggered by an acquisition of voting rights by private equity investors is consistent with the market's

Table 18.3 Cumulative Abnormal Returns to Targets

	CAR	Böhmer Test	t-Test	Johnson Test	Wilcoxon Signed Rank Test	Nobs
Event window	**Mean**	**z-score**	**t-value**	**J-value**	**z-score**	
[−20, +20]	7.61%	3.794***	3.246***	3.250***	−3.485***	125
[−20, +10]	8..37%	4.897***	4.462***	4.491***	−4.215***	125
[−10, +10]	7.49%	4.950***	4.926***	4.985***	−4.387***	125
[−5, +10]	7.27%	5.379***	5.599***	5.678***	−4.904***	125
[−5, +4]	7.99%	6.152***	6.408***	6.547***	−5.434***	125

Notes: This table reports the cumulative abnormal returns for various event windows, the t-values, the J-value, the Wilcoxon's score, and the Böhmer's z-score associated with the cumulative average abnormal return and tested for statistical significance. (CDAX is the corresponding benchmark.) ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

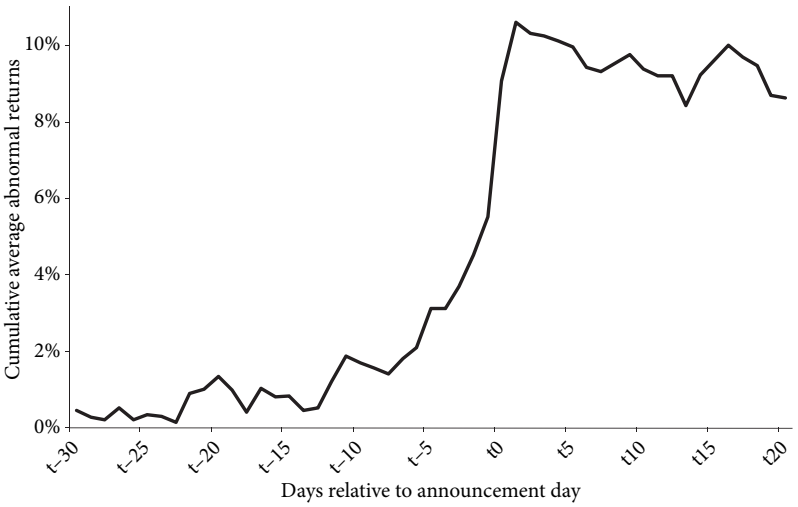

Figure 18.2 Cumulative average abnormal returns around the disclosure of holding at least 5% of voting rights by private equity funds in target companies.

perception that they are able to enhance shareholder value. In this section we want to find out which firm characteristics can help explain the short-term capital market reaction.

When controlling for a firm's ownership structure, we find that target companies with a concentrated ownership (%Closely held Shares) experience lower announcement returns compared to targets with a more dispersed ownership. The statistically significant and negative coefficient of –0.001 for %Closely held Shares indicates that an increase in the ownership concentration of 1 percent lowers the announcement returns by 0.001 percent. This finding can be explained by the market perception that the associated monitoring efforts increase with an increase in

Table 18.4 Cumulative Abnormal Returns to Industry Rivals

	CAR	Böhmer Test	t-Test	Johnson Test	Wilcoxon Signed Rank Test	Nobs
Event window	**Mean**	**z-score**	**t-value**	**J-value**	**z-score**	
[−20, +20]	3.23%	2.041**	1.963*	1.970*	−1.173	201
[−20, +10]	3.90%	2.927***	2.825***	2.840***	−1.936*	201
[−10, +10]	2.05%	2.452**	2.089**	2.097**	−0.948	201
[−5, +10]	2.09%	3.017***	2.517**	2.531**	−1.837*	201
[−5, +4]	1.78%	3.174***	2.639***	2.649***	−2.357**	201

Notes: This table reports the cumulative abnormal returns for various event windows, the t-values, the J-value, the Wilcoxon's score, and the Böhmer's z-score associated with the cumulative average abnormal return and tested for statistical significance. CDAX is the corresponding benchmark. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

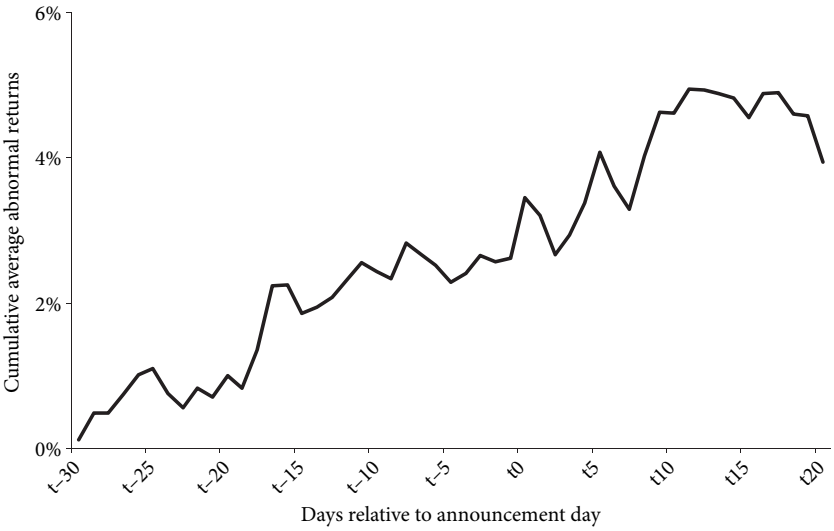

Figure 18.3 Cumulative average abnormal returns to industry rivals.

concentrated ownership. These monitoring costs reduce the agency potential that can be tackled by the private equity managers. In turn we would expect a negative relationship, which is congruent with the empirical finding in Table 18.5.

A high level of competition can force firms toward economic efficiency. To detect whether the capital markets distinguish between competitive and non-competitive product market environments, the respective industry concentration was calculated using the Herfindahl-Hirschman Index (HHI), as defined earlier.[14] We find that the level of competition in an industry has a statistically significant positive impact on the market reaction, indicating that the agency problem is prevalent in a less competitive environment. This is consistent with Giroud and Mueller (2010), who argue that highly competitive industries do not leave room for managerial inefficiency. This reduces the potential for agency cost reduction. Consequently the level of competition in an industry is positively correlated with the expected effects on target firms, because product competition acts to discourage managers from wasting corporate resources (Masulis et al. 2007). As expected, an increase of 1 percent in the industry concentration causes a rise in abnormal returns of about 0.211 percent.

Since agency costs are higher when managers have large amounts of cash at their disposal, we expect that the agency problem is more pronounced for firms with superior operational performance. The result for our proxy variables, cash positions to market capitalization at the end of the year and earnings before interest, taxes, depreciation, and amortization (EBITDA) over total common equity, supports this view. Capital markets consider a high level of cash flow an opportunity to increase shareholder value if active investors achieve their goal of reducing agency conflicts. In particular we find that an increase in cash over a firm's market capitalization of 1 percent yields an increase in cumulative abnormal

Table 18.5 Determinants of the Cumulative Average Abnormal Returns

	Private Equity Targets	
	CAR (−5;+5)	CAR (−5;+4) (Robustness Model)
Constant	−0.027	−0.021
%Closely held Shares	−0.001**	−0.001**
Herfindahl Index (HHI)	0.211**	0.197**
Cash/Market Capitalization	0.158***	0.157***
EBITDA/Total Equity	0.021***	0.017***
Investment	0.017	0.018
Ln(Total Assets)	−0.003	−0.002
Earnings Per Share	0.000	0.000
Equity/Total Capital	0.001*	0.001*
Return on Asset	0.002*	0.001
Number of Observations	81	81
adj. R^2	22.48%	17.10%

Notes: This table shows the results of cross-sectional regressions of private equity target market reaction on the following explanatory variables. The dependent variable is the target (−5; +4) and (−5; +5) (Robustness Model) event window cumulative average abnormal return. The exogenous determinants are the following: *Percent of Closely Held Shares* is a measure of insider ownership and is defined as (*Number of Closely Held Shares/Common Shares Outstanding*) * 100. *HHI* is the Herfindahl-Hirschman Index, computed as the sum of squared market shares (based on total assets) of all firms in a given four-digit SIC industry code. *Cash/Market Capitalization* equals cash holdings divided by year-end market capitalization; *EBITDA/Total Equity* is defined as EBITDA (which is calculated by taking the pretax income and adding back interest expense on debt and depreciation, depletion, and amortization and subtracting interest capitalized) divided by total common equity; *Investment* is defined as capital expenditures divided by net property, plant, and equipment at the end of the previous year and measures a company's investment policy. *ln(Total Assets)* = logarithm of a company's book assets. *Earnings Per Share* represent the earnings for the 12 months ending the fiscal year of the company. *Equity/Total Capital* = (*Common Equity/Total Capital*) * 100. *Return on Asset* = (net income before preferred dividends + ((interest expense on debt-interest capitalized) * (1-tax rate)))/last lagged total assets * 100. *Dividend Yield* = *Dividends Per Share/Market Price-Year End* * 100. All test statistics are computed using White's (1980) heteroskedasticity-consistent covariance matrix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

return of 0,158 percent. A similar picture emerges with respect to a firm's leverage ratio. The potential to increase leverage addresses free cash flow problems; however, this is an attractive alternative only when the expected financial distress costs of the firm are not too large and requires a long-term horizon, which could be undermined by short-term aggressive behavior in the product market. The positive coefficients for Cash/Market Capitalization (0.158), EBITDA/Total

Equity (0.021), and Equity/Total Capital (0.001) are in support of Jensen's (1986) free cash flow hypothesis.

Finally, we find no relationship between market reaction and a company's investment level, size, and earnings per share. Although we expected market returns to be a decreasing function of the target size, we find no evidence supporting this expectation.

Long-Term Valuation Effects on Private Equity Targets

From the short-term capital market reactions and its determinants we learned that capital markets expect that private equity managers address agency cost problems and are perceived as able to successfully change the business strategy of their portfolio companies. To round up the empirical evidence, we report the long-term stock valuation effects on targets to see how these companies emerge after the engagement.

As Table 18.6 shows, the long-term BHARs for the target firms, even corrected for the Fama-French factors, are significantly positive. This result is robust for median and mean BHARs, which means that the results are not driven by outliers and hold for all holding periods, that is, for the 150-day period as well as for the 300-day period.[15]

How can we interpret the derived results? We can clearly see that in the long run private equity targets perform better than the market. This supports one of our central arguments from the beginning of the chapter: that private equity managers are equipped with a skill set and have the appropriate investment vehicle to implement long-term-oriented investment strategies in their portfolio companies. They have the time, the industry knowledge, and the financial resources to address persistent agency conflicts. These properties seem to be the factors of success for active shareholders, which is documented by the outperformance of the targets compared to the market.

Table 18.6 Fama-French Buy-and-Hold Abnormal Returns to Private Equity Targets

	150-Day Period	Number of Observations	200-Day Period	Number of Observations	250-Day Period	Number of Observations	300-Day Period	Number of Observations
Mean BHARs	6.84%**	123	10.21%***	123	9.28%**	122	12.02%**	122
Median BHARs	6.40%**	123	7.33%**	123	6.59%*	122	10.78%**	122

Notes: This table reports the Fama-French BHARs for 150-, 200-, 250-, and 300-day holding periods. The mean (t-test) and median (Wilcoxon rank sum test) BHARs for all holding periods are tested versus their difference from zero. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Conclusion

The chapter illustrates that private equity fund managers have the highest capabilities among the group of new institutional investors to become successful active shareholders and enhance the value of their portfolio companies. This perception is confirmed by short-term capital markets' reaction, where we observe positive returns to the announcement of change in the ownership structure. Capital markets expect that private equity managers have the skill set to enhance the value of target companies by, for example, reduction of agency costs. When we switch the focus to the long-term performance of the target companies we find a positive outperformance compared to the market, even when correcting for Fama-French factors. This provides further evidence that the private equity managers are on average successful in achieving their goals in the target companies.

Furthermore we find that the engagement of a private equity fund conveys private information about an entire industry that becomes immediately public when the private equity managers announce the acquisition of a block of voting rights. Since private equity funds have a limited lifetime their managers cannot act as buy-and-hold investors, but instead acquire companies with the objective of selling them again. Therefore the strategic investment may signal new and positive information about the future prospects of the industry. Furthermore the agency problems could be industrywide, and the engagement will induce industry rival firm managers to improve performance to avoid becoming the next target. In both ways the value of industry rival companies is expected be positively affected by the engagement of private equity managers, which is in line with the information-signaling hypothesis. This is exactly what we observe in the rival companies to private equity targets.

Summarizing, we find ample evidence that private equity fund managers are qualified to sustainably enhance the value of their portfolio companies. Consequently they can be regarded as successful active shareholders. However, this study suggests a number of directions for future research. Further issues that are worth exploring include how target and rival companies have performed under shareholder activism in other corporate governance systems with, for instance, double voting rights. Especially for the acquisition of smaller minority stakes, typically more associated with hedge fund activism, we would expect that industry effects are negligible.

Notes

1. A large shareholder (blockholder) is defined as an entity that owns at least 5 percent of a firm's outstanding shares.
2. See, e.g., Shleifer and Vishny 1997 for an overview.
3. For a detailed discussion, see Shleifer and Vishny 1997 and Becht et al. 2003 and their citations.

4. To qualify for significant tax benefits, the value of the stock of any portfolio company may not exceed 5 percent (Kahan and Rock 2007; Black 1990). Section 64 of the German Investment Act (InvG) similarly restricts the holding of voting rights to 10 percent per stock.
5. In a related study Masulis and Rajarishi (2010) focus on the announcement returns to acquirers in private firms relative to those in public firm acquisitions of venture capital–backed firms.
6. In January 2007 the minimum threshold was lowered to 3 percent.
7. As a robustness check we investigated whether our results were affected by the choice of industry classification codes, and we also employed a market-weighted portfolio to calculate the rival effects. We find that the results remain stable when we use two- or three-digit SIC codes. Tables are available upon request from the authors.
8. We applied the test according to Böhmer et al. (1991) to capture possible event-induced increases in variance, a test to control for the skewness bias, and the Wilcoxon rank sum z-score.
9. We winsorized abnormal returns at the 1st and 99th and the 5th and 95th percentiles to detect the influence of outlier observations. The results of our regression analysis remain quantitatively and qualitatively similar. Tables are available upon request from the authors.
10. In unreported tables we use variance decomposition according to Belsley et al. (1980) to detect collinearity problems. We found no multicollinearity.
11. In robustness checks we also calculated BHARs against the CDAX and abnormal returns based on calendar-time portfolio returns and the Carhart (1997) four-factor model. The results remain quantitatively and qualitatively similar. Tables are available upon request from the authors.
12. See Achleitner et al. 2010 for similar results regarding hedge funds and private equity investments in Germany.
13. The results of Table 19.4 are statistically significant and robust whether or not we define rivals by the three-digit SIC industry classification code.
14. When the HHI equals 1 the market is characterized by a monopoly.
15. We also calculate long-term returns based on other algorithms, such as calendar time (see, e.g., Jegadeesh and Karceski 2009) approaches. Furthermore we also applied other tests to control for the skewness bias and to capture possible event-induced increases in variance. Tables are available upon request from the authors.

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CHAPTER 19

THE COSTS OF ISSUING PRIVATE VERSUS PUBLIC EQUITY FOR ENTREPRENEURIAL VENTURES

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Abstract

Small Canadian listed firms issue private offerings more often than public offerings. We analyze the way the firms discriminate between competing selling mechanisms to minimize their issuance costs. We examine a sample of 799 private placements (PPs) and 469 seasoned equity offerings (SEOs) issued by small and medium-size enterprises between 1993 and 2003. In sharp contrast with the situation observed for other countries, both categories of issuers are similar in size, profitability, and development stage. As expected, PPs are discounted more than SEOs, although the commissions paid to investment bankers are lower. When we control for size and other characteristics of the issuers, the difference between the total cost is 6 percent of the gross proceeds. Although this figure is significant, if the PP process allows firms to obtain financing four or six months earlier than via public offering, the price gap may be economically justifiable. We do not observe significant differences between the total cost of SEOs and direct PPs. This finding, together with the regulatory changes that reduce the resale restriction period, may explain the growing use of the PP market.

The literature on entrepreneurial finance is largely segmented by the source of capital from which entrepreneurs obtain their financing. As entrepreneurial firms generally cannot access public equity because they do not fulfill minimum stock exchange listing requirements, evidence about the choice between private and public equity is scarce. In fact initial public offerings (IPO) provide a unique opportunity to analyze this choice (Boehmer and Ljungqvist 2004, Table 2, p. 73; Boot et al. 2006). As underlined by Denis (2004), much of the research in entrepreneurial finance has examined companies financed by venture capitalists and is concentrated on the U.S. market.

In this paper we analyze the choice between private placements (PPs) and public seasoned equity offerings (SEOs) for entrepreneurial firms able to arbitrate between these two types of financing. We examine the Canadian context, where small and medium-size enterprises (SMEs) are allowed to list on a public venture market, the TSX Venture exchange (TSXV; Carpentier and Suret 2009; Carpentier, L'Her and Suret 2010b). The microcap firms listed on this market cannot attract institutional investors; they are mainly financed by individual investors. The cost of issuing public equity is often considered a major deterrent for small business finance (Oesterle 2006). It is generally assumed that the firms discriminate between competing selling mechanisms to minimize their issuance costs (Chen et al. 2010). The aim of this paper is to determine the extent to which the cost of issuing private and public equity differs for small business when the various characteristics of the issuers are considered. We analyze 469 SEOs and 799 PPs launched by public SMEs in Canada between 1993 and 2003.

In the United States a growing number of public companies place equity privately. Private investment in public equity (PIPE) has expanded rapidly. According to Dai (2010), the amount of capital thus raised has increased from U.S.$4 billion in 1996 to U.S.$56 billion in 2007, while the total amount levied by SEOs was U.S.$75 billion. In Canada during the 1993–2003 period PPs represented 61.60 percent of all post-IPO placements (Carpentier and Suret 2010). Recent data provided by Haggard et al. (2009) illustrate the strong activity of PPs by public firms in several countries. One explanation for this trend is the reduction in issue costs and times. The total cost of an issue could be lower for PPs, even if the degree of asymmetry of information related to the value of the company is probably greater (Ferreira and Brooks 2000). This situation results from direct negotiations between issuers and investors and the absence of certain statutory requirements. Professionals have suggested that each of the two main constituents of issue costs, namely the direct cost and the indirect cost, are higher for public issues (Goldfarb 2003). Issue time frames associated with PPs are also significantly shorter. Both the comparative advantage of PPs over SEOs and the development of this market may partly result from the deteriorating conditions of public issues. Mola and Loughran (2004) document a sharp increase in discounts on SEOs, not mitigated by the reduction in the associated direct costs. Thus it could have become less expensive to undertake private issues than public issues. Nonetheless evidence that would allow a direct comparison of the costs of these two financing methods is lacking for entrepreneurial firms. Consequently the

goal of this study is to get direct evidence of comparative private and public issue costs for small businesses. We aim to provide original insight into the costs of two alternative modes of equity finance to managers and policymakers. From an academic point of view, our study is the first, to our knowledge, to analyze the implications of the private versus public equity choice for public small businesses.

It is difficult to compare the relative costs of PIPEs and SEOs in the United States because of the substantial difference in the characteristics of issuers and deals pertaining to the two types of issues. PIPEs usually follow periods of poor operating performance, and PIPE issuers are poorly performing firms (Chaplinsky and Haushalter 2010). By contrast, SEO issuers are generally large firms with strong operating results (Loughran and Ritter 1997). As stated by Chen et al. (2010), it is likely that many of the PIPE firms are denied access to the traditional SEO market owing to their high level of information asymmetry and poor operating performance. In the United States the median market capitalization of PIPE issuers before the transaction is about 10 percent of the median market capitalization of SEO issuers. Many PIPE deals are structured and include convertible securities that contain readjustment clauses pertaining to prices or the conversion rate, while SEO deals lack this attribute. In Canada small issuers of PPs and SEOs exhibit similar characteristics. They generally issue common shares. Canadian data provide not only out-of-sample evidence, but also a more relevant comparison of private and public equity issued by entrepreneurial ventures. Previous comparisons of PPs and SEOs study firms that cannot be considered entrepreneurial ventures and often compare two subsets of firms with large differences in size and profitability (Chen et al. 2010).

The chapter is organized as follows. First, we describe the institutional setting and explain the extent to which the Canadian situation differs from the one described in most PIPEs studies. We then review the factors that potentially influence the two main constituents of the costs of private and public equity issues. We present the data and descriptive statistics pertaining to Canadian equity issuers, related to the various dimensions that can affect issuing costs and explore the issue costs of PPs and SEOs and whether PP and SEO costs differ significantly when we control for issue and issuer characteristics.

Private and Public Equity on the Canadian Public Venture Market

The Canadian Stock Market

The Canadian stock market includes a venture section, the TSXV, where SMEs are allowed to list at a very early stage of development (Carpentier et al. 2010b). The TSXV describes itself as a public venture market devoted to providing access to capital for

earlier-stage companies or smaller financings. For a listing on Tier 2 of TSXV, a firm must meet the following conditions: stock price over CAN$0.15 and post-IPO net tangible assets and market capitalization higher than CAN$500,000. TSXV has no requirements for issuer profitability; it simply stipulates sufficient working capital for twelve months of operations; most new companies list with no revenues. Firms that list on the Canadian market are significantly smaller in size and capitalization and at an earlier developmental stage than those that list on the junior markets around the world (Carpentier and Suret 2009). Many of these firms can be considered SMEs according to the classic definitions. Using the definitions of small and microcap firms given by the Advisory Committee on smaller companies (SEC 2006), about 98 percent of TSXV companies could be considered microcap companies. After going public, TSXV listed firms frequently use PPs because of favorable regulation.

PP Regulation

In Canada, when a company distributes its securities, it has to prepare a prospectus providing full disclosure of all material facts related to the offered securities. However, some distributions of securities do not require the issuer to prepare and file a prospectus: PPs are "exempted" from the prospectus requirement, as are U.S. PPs issued under regulation D of Rule 144. Exempted offerings are done in a "closed system," which implies that exempted securities cannot be freely and immediately resold to the public. However, in Canada several rounds of regulatory changes have softened the resale restriction and the conditions the firms and investors have to meet to use the closed system.

The changes introduced in Ontario in 2001 through Rule 45–501 and the shortening of lock-up periods carried out concomitantly in all Canadian provinces may have reduced the barriers for issuing private equity. Before 2001 legislation in many Canadian provinces, including Ontario, offered two exemptions from the requirement to issue a prospectus and register: the private company exemption and the $150,000 exemption, whereby people with $150,000 to invest were deemed sophisticated enough to make investment decisions without the need for a prospectus. Following the recommendations of the Ontario Securities Commission Task Force on Small Business (Ontario Securities Commission 1996), the Ontario government implemented significant changes to the securities regulation. Rule 45–501 replaces several previous exemptions with a closely held business issuer exemption and an accredited investor exemption. The accredited investor exemption permits issuers to raise any amount from any person or company that meets specified qualification criteria. Accredited investors include banks; loan and trust companies; insurance companies; the federal, provincial, and municipal governments and their agencies and international counterparts; mutual funds and nonredeemable funds that distribute securities under a prospectus or to accredited investors; certain pension funds and charities; individuals (together with their spouses) with a net worth of at least $1 million or having had in the prior two years and expecting in the next year

a net income of not less than $200,000 individually or $300,000 as a couple; corporations and other entities with net assets of at least $5 million; and directors, officers, and promoters of an issuer and the issuer's controlling shareholders. Issuers are not required to provide accredited investors with an offering memorandum or other disclosure document.

Further, several securities exchange commissions, including the Ontario Securities Commission, have adopted the new Multilateral Instrument 45–102 Resale of Securities (MI 45–102). Essentially this rule harmonizes certain provincial and territorial resale restrictions applicable to securities distributed under prospectus exemptions. The MI 45–102 also changes the resale restriction periods. Under the previous rule, securities bought in a PP are subject to a four-month holding period if the issuer is a qualifying issuer (that is, if its securities are listed on an exchange). If the issuer is not a qualifying issuer, resale is restricted for twelve months. MI 45–102 reduces the restricted period from twelve to four months for the securities of a nonqualifying issuer.

On September 14, 2005, the Canadian Securities Administrator's National Instrument 45–106 (NI 45–106), entitled "Prospectus and Registration Exemptions," became effective in most provinces. This rule was an effort to harmonize and consolidate the various prospectus and registration exemptions available countrywide. This rule sets the minimum investment exemption uniformly across Canada. Securities can be sold on an exempt basis to any purchaser if the purchaser, acting as principal, buys securities with an acquisition cost of not less than $150,000 paid in cash at closing. According to this regulation, firms can use the accredited investor exemption to raise any amount, at any time, from any person or company that qualifies as an accredited investor.

To summarize, in Canada many individuals and institutions can participate in PPs, and the resale restrictions are minimal.

PIPEs, PPs, and Special Warrants

PPs reported in Canada differ from PIPEs, observed mainly in the United States. Both categories of placements are done by public companies. However, PIPEs differ from typical PPs of equity in that the shares purchased privately can be sold in public securities markets as soon as the issuer registers them with the appropriate regulatory authority, thus adding liquidity to the investment (Haggard et al. 2009). As described by Dai (2010), following the closing of a PIPE transaction, the issuer prepares and files a resale registration statement with the SEC. For Dai, the difference between PPs and PIPEs is that the closing of a PIPE does not depend on the SEC review process. However, the main difference between both groups of placements lies in the numerous and complex contracting terms. Mainly, PIPE offerings frequently include antidilution protection, warrants, price resets, and other cash-flow rights that can differentiate their returns from those of shareholders (Chaplinsky and Haushalter 2010).

In Canada before November 2001 the restricted period when the PP purchasers are prohibited from reselling their shares to the public market was generally twelve months. This lock-up period was reduced to four months thereafter. The registration process does not exist, and the resale restriction can be traced mainly to the thin trading volume of the typical issuers of PPs. U.S. and Canadian placements also differ strongly along two associated dimensions. First, while institutional investors buy most of the PIPEs in the United States, they are not involved in the Canadian PPs. This situation can be traced to the small size of the issuers. Second, complex contracting terms do not prevail in Canada. Most of the PPs comprise common shares without particular clause.

The unique specificity of the Canadian market was the use of special warrants, As Maynes and Pandes (2008, 3) explain, "Sold as privately placed securities, these warrants become exercisable at a specified future date, when the warrants can be exchanged for shares of the issuer at no additional cost. The warrants are issued without a prospectus. However, the issuer promises to file a prospectus so that when the warrant is exercised, the newly issued shares become freely tradable. A special warrant deal essentially offers the speed of a private placement and at the same time offers investors the promise of freely tradable securities. They can be viewed as hybrid private/public offerings." As our objective is to compare the cost of each type of financing, we remove the special warrants issues from our sample, keeping only pure "plain vanilla" PPs and SEOs.

Issue Costs of Private and Public Equity

SEOs versus PPs

For larger firms, issuing a PP can often be a less expensive option than the classical SEO. Managers seems to choose the type of issue to minimize their issuance costs (Chen et al. 2010). The extent to which this situation prevails for small and emerging firms remains an open question. The tangible issue costs of SEOs or PPs are twofold.[1] First, the issuer incurs several direct costs associated with the issue, including the legal and auditing fees associated with drafting a prospectus (the other direct costs) and the commission of intermediaries, namely the gross spread.[2] The discount (underpricing), an indirect cost, is the second component of the issuing cost.

PP issuers do not bear the cost of preparing a prospectus. This can reduce the direct issue cost. When an investment banker is involved in the PP process, the gross spread should be larger than for SEOs, because the investment bankers' risk is greater in a less liquid offering, yet a significant proportion of PPs is issued without investment bankers. In such a situation the offerings can bear a larger discount, but the gross spread should be null. Chen et al. (2010, Table 2) report overall smaller

median direct costs for PIPEs without agents (3.9 percent) than for SEOs (5 percent), but the direct cost of PIPEs involving intermediaries is higher (6 percent).[3]

PPs and SEOs are generally sold at a discount relative to the market price. Two main arguments can explain such a discount. The first is a compensation for the lack of liquidity. The second is a compensation for the cost of information acquisition. In both cases the discount is expected to be larger for PPs than for SEOs. PPs are illiquid by regulation, but also because they represent often large blocks relative to the trading volume of the issuers' stocks. Further, asymmetry of information should be larger when the firms do not issue a prospectus.

Hertzel and Smith (1993) conclude that PIPE discounts are influenced by the costs incurred by private investors to resolve information asymmetry about the firm. In other words, when value is more difficult to ascertain, investors will expend more resources to determine value and will thus require larger discounts. Given that the PP process is less transparent than the conventional SEO process, discounts should be lower for SEOs, as Ang and Brau (2002) contend. In the United States most studies estimate PIPE discounts at between 9 and 20 percent (Hertzel and Smith 1993; Wu 2004), while Mola and Loughran (2004) estimate discounts at 3 percent for SEOs. Chen et al. (2010, Table 2) report larger discounts for PIPEs (12.2 and 14.9 percent when placement agents are involved) than for SEOs (2.9 percent). However, the discount seems to be largely influenced by the size of the placement. For issues involving less than U.S.$10 million, direct PIPEs generate lower direct costs than SEOs (3.5 and 6.9 percent, respectively), but PIPEs with placement agents generate costs close to those observed by SEOs (6.7 percent). These intermediated small PIPEs also generate a higher discount (23.8 percent), for a total cost of 30.3 percent. These figures are higher than for direct PIPEs (22.6 percent) and for SEOs (16.1 percent). The objective of reducing the costs of financing cannot be a fully satisfactory explanation for the extensive use of PPs by small firms. The small number of SEOs in this size bracket in the United States does not allow an unequivocal conclusion.

Both the gross spread and the discount are linked to factors other than the type of issue, such as size, timing of the issue, risk, and the nature of securities issued. These factors generally vary depending on whether companies place equity publicly or privately and can be time-dependent. It is thus necessary to control for them when comparing private and public equity issue costs. Finally, the firms probably self-select between PPs and SEOs, and we need to consider this self-selection dimension in our model.

Control Variable

Size of Issues and Issuers

The size of issues and the size of issuers are related, in that the biggest issuing companies generally undertake larger issues. Direct costs are inversely related to the size of the issue, because some components are partially fixed costs. In addition

the size of issues and issuers is generally positively associated with liquidity. As the securities of the most capitalized companies are more liquid, they represent a lower risk for investment bankers. Butler et al. (2005) show that the investment bankers' fees tend to be lower for firms with more liquid stocks. Discounts are also inversely related to firm size because they are associated with ex-ante uncertainty (Kim and Shin 2004). Bajaj et al. (2002) and Hertzel and Smith (1993) also observe an inverse relation between issue size and PIPE discounts. Hertzel and Smith (1993) conclude that this finding supports the view that discounts reflect economies of scale in information production, along with the theory that information asymmetry is greater for small firms. Ang and Brau (2002) document that the most transparent companies incur lower issue costs. Conversely, opaqueness is generally associated with small companies. We expect that both the direct cost and the discount will be negatively associated with firm size.

Hot Issue Markets

Issue costs can also be influenced by successive hot and cold issue markets. Hot issue markets exist for both IPOs and SEOs (Eckbo et al. 2007, 251). Waves of PPs can also be observed, for example from 2001 to 2003 (253). Hot IPO markets have been described as having an unusually high volume of offerings, sharp discounts, and frequent oversubscription (Helwege and Liang, 2004). Therefore the discount should be greater during hot issue markets than during cold markets.

Timing and Run-up

According to the market timing hypothesis proposed by Loughran and Ritter (1995), stock offerings are motivated primarily by managers' desire to take advantage of an open financing window to sell overvalued equity. Even if the timing hypothesis seems to explain the SEOs decision only partially (DeAngelo et al. 2010), the equity offerings are often observed after a period of positive returns. After such a rally the probability of overvaluation increases. As Baker and Wurgler (2007, 130) put it, "Stocks of low capitalization, younger, unprofitable, high-volatility, non-dividend paying, growth companies or stocks of firms in financial distress are likely to be disproportionately sensitive to broad waves of investor sentiment." Our sample mainly consists of firms similar to those described by Baker and Wurgler. These firms should be highly sensitive to the irrational investor sentiment. According to the timing proposition, stock issued after stronger stock market performance should exhibit larger underpricing.[4]

Investment Bankers and Auditors

Entrepreneurs with more favorable information about a firm's value are more likely to choose a higher quality investment banker (Ang and Brau 2002). The same argument holds for the quality and reputation of the auditor. In both cases the gross spread should be higher and the discount lower for higher quality investment

bankers and auditors, because the choice of a high-quality investment banker or auditor signals better prospects, lower risk, and lower information asymmetry.

Self-selection

The choice between SEO and PP induces a self-selection problem. This choice should be explained by the managers' long-run objectives and private information, and linked to potential private investors (an unobservable set of variables), together with an observable set of variables. Previous research shows that PIPEs are a last-resort choice in the U.S. context (Brophy et al. 2009; Chaplinsky and Haushalter 2010; Chen et al. 2010). Chen et al. conclude that "firms which utilize the PIPE process have weak operating performance and display characteristics consistent with high levels of information asymmetry" (30). We can control for several observable variables to consider the financial health and operating performance of the issuers. Dummies indicating the industrial sector and the development stage can partially capture the level of information asymmetry. However, the choice between PP and SEO can also be explained by several unobservable variables, including the managers' long-run objectives and their private knowledge of the business. We use the classical two-stage procedure of Heckman (1979) to control for this problem.

Data and Stylized Facts

Data Source and Sample

Using the *Financial Post* database, we identify 2,862 Canadian SEOs and 4,592 PPs of primary shares or units that are neither funds nor trusts. Our data span the 1993–2003 period. We restrict the population to the subsample of SMEs, using the definition proposed by the European Union. The European Union sets the following limits for medium-size, small, and microenterprises:[5] the total balance sheet should not exceed €43 million, €10 million, and €2 million, respectively, in 2003. By converting the first value to Canadian dollars using the exchange rate at the end of 2003, we get a maximum limit of $70 million in 2003. We express this limit in current dollars, using the Canadian consumer price index. Each firm exceeding this limit, adjusted for inflation at the issue time, is excluded from the sample. To obtain the accounting and stock price data of equity issuers, we match our sample of issues with the Datastream (market data) and Cancorp Financials (accounting data) databases, using Community on Uniform Security Identification Procedures (CUSIP) and names. We analyze each case of missing data to track the various

changes (in name, ticker, or exchange) that might explain the unavailability of data around the issue date. We exclude special warrant offerings because such offerings are a hybrid form of offering between PP and SEO. We get the gross spread from the FPinfomart.ca database and manually search for the missing data on SEDAR (the Canadian equivalent of Edgar). We delete the issues for which gross spread or market data were missing. The final sample comprises 1,268 issues, including 799 PPs and 469 SEOs issued by public SMEs between 1993 and 2003.

Descriptive Statistics

We report the main characteristics of SEO and PP issuers in Table 19.1. Both groups comprise small and microenterprises.[6] The median total balance sheet is CAN$6.32 million for PP issuers and CAN$7.55 million for SEO issuers. The limits defined by the European Union for small and micro firms' total asset are equivalent to CAN$15 million and CAN$3 million. Both subsamples present similar characteristics in size, a situation partially explained by the criteria used for selecting the observations. Based on the Wilcoxon test, the two groups do not differ in size at conventional significance levels. The pre-money book value of equity is slightly larger for SEOs (CAN$4.93 million) than for PPs (CAN$4.36 million), and the difference is significant at the 5 percent level.

In sharp contrast with previous U.S. studies, which are not restricted to SMEs, both subsamples present similar operating performances. The median revenues differ statistically but not economically. The difference in median between both groups is CAN$90,000 in favor of SEO issuers. The median net earnings are negative in both groups and do not differ statistically. A large proportion, 50.81 percent, of PP issuers do not report any revenues, and this proportion is smaller for SEOs (43.50 percent). These proportions differ statistically at the 5 percent threshold. Corresponding proportion for firms reporting losses are 84.11 and 80.81 percent, respectively. Even if the PP issuers exhibit no revenues and negative earnings more frequently than SEO issuers, the difference between both groups is slight, and both groups of issuers comprise emerging and distressed firms. We estimate the number of months to cash deplete as the cash, deposit, and short-term investment in year –1 (the last financial statement closed before the issue) divided by the absolute value of earnings before interest, depreciation, and amortization (EBITDA) in year –1, multiplied by 12. DCASH is a dummy variable that equals 1 if the number of months to cash deplete is higher than twelve and 0 otherwise. We consider that a firm that will run out of cash during the next twelve months is distressed. Based on this indicator, the proportion of distressed firms is higher in the SEO group than in the PP group, but the proportions do not differ significantly. The median gross proceeds differ significantly, but they are economically close. In Canada public SMEs share many characteristics, regardless of whether they finance themselves by private or public equity.

We complete the analysis by studying the quality of the intermediaries involved in the issuing process. Prestigious investment bankers are differentiated from the rest of the banker population.[7] Panel A shows that only 28 PPs (105 SEOs) are underwritten by prestigious investment bankers. They clearly participate in the largest deals. The median SEO gross proceeds underwritten by prestigious investment bankers are about CAN$26 million, while nonprestigious investment bankers participate in SEOs of about CAN$2 million. We also distinguish PPs issued without the intermediation of a placement agent (self-underwritten PPs or direct PPs). As expected, they are the smallest. Further, we separate issues audited by prestigious auditors from the others.[8] Accordingly 49 percent of the financial statements of companies issuing PPs and SEOs are audited by a prestigious auditor. Both groups do not differ along this dimension. Almost 40 percent of PPs and 47 percent of SEOs occurred in hot issue periods.

Panel B of Table 19.1 compares the industrial distribution of PPs and SEOs. Over the 1993–2003 period resources companies account for 44.25 percent of the gross proceeds of PPs, compared with 25.20 percent of the SEO gross proceeds. The proportions are 15.23 and 41.72 percent for high-tech PPs and SEOs. The proportions for the oil and gas and other sectors are comparable. In contrast with their U.S. counterparts, Canadian PPs are strongly concentrated in the primary sector, as are SEOs.[9]

Univariate analysis does not point to strong differences between SEO and PP users. However, we cannot rule out the possibility that firms self-select their financing choice, based on a combination of several characteristics and on unobservable factors.

Self-selection

We use the two-stage procedure of Heckman (1979) to estimate the self-selection model. In the first stage, consistent estimates are obtained from a probit regression of the dummy variable DPP_i, which equals 1 if the company places equity privately, and 0 otherwise, on Z_i, a vector of explanatory variables. These estimates are used to compute the inverse Mills ratios (IMR), λ_{oi}. In the second stage, the cost equations are estimated by ordinary least squares (OLS), with the IMR included as an additional explanatory variable (Heckman's lambda). The choice model is based on the general idea that better companies opt for SEOs. Based on previous evidence, we hypothesize that firms seeking smaller amounts of cash are more likely to choose PPs rather than SEOs. The same choice is expected for firms with limited amounts of cash to deplete, because PPs can be completed more quickly than SEOs. We control for the firm's financial conditions using a dummy associated with the no-sales condition. We also measure the number of months to cash deplete, to estimate the level of constraints faced by the firm.[10] The pre-money book-to-market ratio is used to proxy the growth opportunities faced by the firm. We expect that more growth opportunities will be associated with the SEO choice.

Table 19.1 Sample Characteristics and Industrial Distribution

	PPs			SEOs				
	#	Mean	Median	#	Mean	Median	p value	
Panel A: Sample Characteristics								
Financial Conditions								
Total assets, in $M	799	13.11	6.32	469	24.19	7.55	0.0678	
Shareholders' equity, in $M	799	8.73	4.36	469	16.30	4.93	0.0191	**
Revenues, in $M	799	3.91	0.00	469	8.94	0.09	0.0012	***
Net earnings, in $M	799	−1.91	−0.60	469	−2.82	-0.50	0.9440	
ROA (net earnings/ Total assets), in %	799	−28.51	−13.13	469	−32.76	-20.88	0.0341	**
No revenues, in %	406	50.81	–	204	43.50	–	0.0103	***
Negative earnings, in %	672	84.11	–	379	80.81	–	0.1039	
DCASH = 1, in %	345	43.18	–	222	47.33	–	0.2775	
GP, in $M	799	4.50	2.74	469	14.14	3.50	0.0014	***
Issuing Period								
Cold	196	3.97	2.50	100	15.25	3.74	0.1366	
Neutral	289	5.04	2.95	148	15.56	6.13	0.0008	***
Hot	314	4.34	2.64	221	12.68	2.31	0.0752	
Investment Banker								
Prestigious	28	11.36	7.91	105	38.53	25.63	<0.0001	***
Nonprestigious	440	4.94	3.02	364	7.10	2.01	<0.0001	***
None	331	3.35	2.31	-	–	-		
Auditor								
Prestigious	392	5.06	3.00	229	19.19	10.01	<0.0001	***
Nonprestigious	407	3.97	2.48	240	9.31	2.00	0.0047	***
Panel B: Industrial Distribution								
	#	GP		#	GP			
Res. %	46.93	44.25		36.89	25.20			
Oil %	25.03	28.13		25.16	21.52			
HT %	14.27	15.23		25.59	41.72			
Other, %	13.77	12.39		12.37	11.56			

Notes: Based on the final sample of private placements (PPs) and seasoned equity offerings (SEOs) by small and medium-size enterprises in Canada. All amounts are in Canadian $M. # means number of issues. p value is the median difference p value of a nonparametric sign rank test. GP means gross proceeds. $M means millions of dollars. ROA is net earnings divided by total assets. DCASH is a dummy variable that equals 1 if the number of months to cash deplete is higher than 12 and 0 otherwise. Res. %, Oil %, HT %, Other % is the percentage of the total gross proceeds of PPs (SEOs) issued respectively by Resources, Oil and gas, High-tech and biotech, and Other companies.*** means significant at 1%,** means significant at 5%.
Source: FPinfomart.ca.

We use a dummy for the two industries where asymmetrical information is likely to be higher—high-tech and biotech, and oil and gas—because the issuers of these sectors included in our sample are mainly exploration firms. We consider the market conditions using the market return during the twelve months preceding the announcement. We also include a dummy for the hot issue period. We use the following probit model to analyze the characteristics influencing the type of issuance in a multivariate framework:

$$DPPi = a0 + a1\ Log\ (GPi) + a2\ DHTi + a3\ DOGi + a4\ Rm12m1i + a5\ Pre\ B/Mi + a6\ DCASHi + a7\ DNSi + ui \quad (1)$$

for i = 1 to n. Variable definitions are provided in Table 19.2.

We report the results in Table 19.3. Because our objective is to explain the probability of firms' opting for a PP, a positive coefficient is associated with an increase in the probability of observing a PP and a decrease in the probability of observing an SEO. The model is significant. The variables explaining the choice are the gross proceeds and the dummy variables associated with the high-tech sector and

Table 19.2 Variable Definitions

Variable	Definition
DPP_i	Dummy variable that equals 1 if the issue i is a PP and 0 otherwise.
Log (GP_i)	Logarithm of the gross proceeds of issue i in CAN$.
DHT_i	Dummy variable that equals 1 if the issuer is a high-tech or biotech company and 0 otherwise.
DOG_i	Dummy variable that equals 1 if the issuer is an oil and gas company and 0 otherwise.
$Rm12m1_i$	Index return during the 12 months before the issue i (–12 to –1).
Pre B/M_i	Pre-money book-to-market ratio of the issuer.
$DCASH_i$	Dummy variable that equals 1 if the number of months to cash deplete of the issuer is higher than 12 and 0 otherwise.
DH_i	Dummy variable that equals 1 if the issue month is hot and 0 otherwise.
DNS_i	Dummy variable that equals 1 is the issuer reports no revenues (sales) before the issue.
TC/P_i	Total cost of issue i divided by the gross proceeds.
D/P_i	Discount of the issue i divided by the gross proceeds.
GS/P_i	Gross spread of the issue i divided by the gross proceeds.
DNU_i	Dummy variable that equals 1 if the issue i is a direct PP (without a placement agent) and 0 otherwise.
PA_i	Dummy variable that equals 1 if the financial statements are audited by a prestigious auditor and 0 otherwise.
$Lambda_i$	Heckman's lambda estimated in the probit model, using equation (1).

the hot issue market. The size of the proceeds is negatively associated with a PP. When a firm needs a large sum of cash, it uses an SEO. The high-tech dummy is negatively associated with PPs. This result can be traced to the fact that our period of study includes the high-tech bubble, a highly favorable period for SEOs. The dummy associated with the hot issue markets, which includes the bubble, is negatively linked with the probability of observing a PP. Overall, size is the only idiosyncratic variable that explains the choice of public or private equity financing in our sample of small businesses. The dummy variable associated with the lack of revenues, the level of financial constraints, and the indicator of financial constraints does not influence the probability of PP. The explanation for emerging firms' choice of private versus public equity is not the main objective of this study. We have left the development of more complete models, including interaction effects, to future studies.

Table 19.3 Choice Model between Private Placements (PPs) and Seasoned Equity Offerings (SEOs)

		PPs N = 799		SEOs N = 468	Probit	Probit
		Mean		Mean	Estimate	Pr>ChiSq
Intercept					2.35	<0.0001
GP	in $M	4.50	***	14.14	-0.12	0.0004
DHT	in %	14.27	***	25.59	-0.43	<0.0001
DOG	in %	25.03		25.16	-0.17	0.1066
Rm12m1	in %	10.48		11.91	-0.03	0.8901
pre B/M		0.69		1.08	0.03	0.1843
DCASH	in %	47.85		51.15	0.03	0.7167
DH	in %	39.30	***	47.12	-0.25	0.0032
DNS	in %	51.07	***	43.59	0.01	0.9201
Chi Square					53.68	<0.0001

Notes: We estimate the following probit model: $DPP_i = a_o + a_1 \text{ Log } (GP_i) + a_2 DHT_i + a_3 DOG_i + a_4 Rm12m1_i + a_5 \text{ Pre } B/M_i + a_6 DCASH_i + a_7 DNS_i + u_i$ for I = 1 to n, with DPP_i as a dummy variable that equals 1 if the issue i is a PP and 0 otherwise. The probit procedure models the probabilities of having $DPP_i = 1$; GP_i is the gross proceeds in CAN$ of issue i; DHT_i is a dummy variable that equals 1 if the issuer is a high-tech or biotech industry and 0 otherwise; DOG_i is a dummy variable that equals 1 if the issuer is an oil and gas industry and 0 otherwise; $Rm12m1_i$ stands for the index return during the 12 months before the listing (–12 to –1). Pre B/M_i is the pre-money book to market ratio of the issuer. $DCASH_i$ is a dummy variable that equals 1 if the number of months to cash deplete is higher than 12 and 0 otherwise. DH_i is a dummy variable that equals 1 if the issue month is hot and 0 otherwise. DNS_i is a dummy variable that equals 1 if the firm reports no revenues (sales) before the issue. All indications of statistical significance shown in the "PPs mean" column indicate whether the mean value for the relevant variable in the PP sample is statistically different from the mean for the same variable in the SEO sample. *** means significant at 1%, ** means significant at 5%.
Sources: FPinfomart.ca and Datastream.

Issue Costs of Canadian PPs and SEOs

Univariate Analysis

Table 19.4 presents annual average gross spreads, discounts, and total costs per year and for the whole period. Similar to prior studies, the discount is calculated using the issue price of the PP and the market price ten days after the announcement date (Hertzel and Smith 1993; Wu 2004). More formally, discount = (P_{+10}—Poffer/P_{+10}), where P_{+10} is the market price ten days after the pricing date and *Poffer* is the offer price.[11] Using the postissue price as a basis to estimate the discount limits the possible impact of the announcement effect.

Table 19.4 shows that the mean (median) gross spread differs by 289 (200) basis points. SEO gross spreads are stable through time, while PP gross spreads are markedly lower from 1999 to 2001: less than 2 percent. This can be linked to a high proportion of direct PP that we observe during this period. PPs and SEOs are usually issued at a discount. The average (median) total cost is 13.98 percent (13.72) for PPs and 10.20 percent (8.03) for SEOs. In general SEOs are less costly than PPs, and the average (median) difference is about 378 (569) basis points, which is much lower than the one observed in the United States for small financing. This difference can be largely traced to the low level of PP discount in Canada. Table 19.4 reports that the median Canadian discount is 9.09 percent for PPs and 2.31 percent for SEOs.[12]

Table 19.5 presents the characteristics of gross proceeds and issue costs when the sample is divided according to several dimensions. Our discussion is based on the analysis of medians. Panel A presents distribution by industry and illustrates that costs differ by sector. The lowest costs are observed in the oil and gas sector (6.00 percent for PPs and 3.81 percent for SEOs), where the difference between PP and SEO issue costs is smallest (219 basis points). The highest costs are observed in the resources sector and in other sectors excluding technologies. The difference between PP and SEO issue costs is about 715 basis points for the resources sector and 613 basis points for the other industries, excluding technologies. The differences are mostly due to the discounts, which fluctuate strongly across the years and across the sectors. The investment bankers' compensation appeared relatively stable, except for the other industries, including high-tech.

Panel B presents the costs when issues are distributed by periods of hot and cold issue markets, defined for each of these markets. These periods have a limited effect on the public issues, because the greatest difference between medians is only 194 basis points. This result is not consistent with evidence related to the SEO market in the United States. Nonetheless these periods have a significant effect on PP issue costs. The highest median difference is 801 basis points. Because the discounts are double in size during periods of hot issue markets, costs are much higher.

Panel C documents that total costs are reduced to 9.09 percent when the company places its securities directly, compared with 10.82 percent when a prestigious

Table 19.4 Annual Distribution of Private Placements (PPs) and Seasoned Equity Offerings (SEOs) Size and Costs

Year	Gross Spread, in %		Discount, in %		Total Cost, in %	
	Mean	Median	Mean	Median	Mean	Median
Panel A: PPs						
1993	2.89	0.00	16.38	16.80	19.27	18.50
1994	4.01	4.25	14.08	16.67	18.09	18.08
1995	4.49	5.50	16.67	17.81	21.16	23.08
1996	5.46	6.00	10.61	8.11	16.07	14.89
1997	4.85	5.00	8.22	4.76	13.07	12.76
1998	2.38	0.00	-9.01	-11.16	-6.63	-8.66
1999	1.51	0.00	7.75	5.18	9.26	6.28
2000	1.77	0.00	13.65	11.43	15.41	13.25
2001	1.02	0.00	4.49	4.76	5.51	6.25
2002	2.84	0.00	7.12	5.88	9.96	9.37
2003	5.38	6.00	10.27	8.13	15.65	13.20
Total	**3.53**	**5.00**	**10.45**	**9.09**	**13.98**	**13.72**
Panel B: SEOs						
1993	7.29	7.50	-1.26	-4.20	6.03	3.44
1994	7.43	7.50	7.19	1.35	14.63	8.00
1995	6.09	7.50	5.49	3.18	11.59	6.39
1996	6.89	7.00	4.12	3.61	11.01	10.35
1997	5.81	5.25	5.76	2.13	11.57	6.63
1998	5.66	5.38	-6.92	-6.64	-1.26	0.61
1999	5.97	6.25	4.85	1.39	10.82	6.75
2000	6.33	7.00	13.15	6.83	19.49	13.33
2001	5.63	6.00	2.06	5.51	7.70	10.20
2002	6.21	6.00	0.60	3.95	6.80	9.02
2003	6.43	6.38	3.12	0.59	9.55	7.05
Total	**6.42**	**7.00**	**3.78**	**2.31**	**10.20**	**8.03**

Notes: The total cost is measured as gross spread plus discount. Discount is measured as (market price 10 days after the announcement date – issue price)/market price 10 days after the announcement date).
Sources: Fpinfomart.ca and Datastream.

investment banker is involved, and 15.48 percent when the intermediary is a less prestigious investment banker. This difference results from gross spreads, which are null for direct PPs. As expected, the median discount is lower (5.57 percent) when a prestigious investment banker is enlisted than when the company places its securities independently (9.09 percent). Direct PPs are discounted more than intermediated offerings because of the higher uncertainty and information acquisition costs. However, the slight increase in discount is more than compensated by the direct costs, which are zero in this case. Based on these results, managers may be better off when they issue directly than when they hire a nonprestigious investment banker.

Even if the gross proceeds are lower in Canada than in the United States, financing costs are also lower. For a sample of U.S. issues with gross proceeds lower than $10 million, Chen et al. (2010, Table 2) report a mean total cost of 22.6 percent for direct "plain vanilla" PIPEs and 16.1 percent for SEOs. In Canada we report a mean total cost of 11.27 percent for direct PPs (Table 19.5, Panel C) and 10.20 percent for SEOs (Table 19.4, Panel B). Thus the difference in total costs between the U.S. and the Canadian issues is about 1,133 basis points for direct PPs and 590 basis points for SEOs. A similar situation has been observed for IPOs (Kooli and Suret 2003). This can be explained by the dedication of the Canadian market to small and medium-size companies.[13] In the United States SEOs involving gross proceeds lower than U.S.$10 million are exceptional: they represent 2.5 percent of Chen et al.'s (2010) U.S. sample but half of the population of Canadian SEOs (Carpentier et al. 2008). The median U.S. PIPE gross proceeds are U.S.$7.9 million. The corresponding Canadian number is CAN$3 million, from 1993 to 2003. The Canadian market is certainly more receptive to small equity financing than the U.S. market.

The preceding descriptive statistics show that several factors, whose effects are probably intertwined, explain the differences between the costs of the two issuance methods examined. Below we conduct a more thorough analysis to determine how PP and SEO issue costs differ when various explanatory factors are jointly considered.

Cost Models

We estimate a model of total, direct, and indirect issue costs to examine whether there is a significant difference between costs of private and public issuance, once we control for several factors related to the relative issue size, industries, auditors, financial situation of the issuer, and conditions of the issue market. Model 2 is estimated with each form of costs as a dependent variable:

$$\begin{aligned} Y_i = {} & a_o + a_1\, DPP_i + a_2\, Log(GP_i) + a_3\, DOG_i + a_4\, DHT_i + a_5\, DNU_i \\ & + a_6\, PA_i + a_7\, Rm12m1_i + a_8\, Pre\ B/M_i + a_9\, DCASH_i + a_{10}\, DH_i \\ & + a_{11}\, DNS_i + a_{12}\, Lambda_i + e_i \end{aligned} \tag{2}$$

Table 19.5 Distribution of Private Placements (PPs) and Seasoned Equity Offerings (SEOs) Costs by Industry, Windows of Opportunity, and Use of Investment Bankers

	Number	Gross Spread, in %		Discount, in %		Total Cost, in %	
		Mean	Median	Mean	Median	Mean	Median
Panel A: Segmentation by Sector							
Resource Companies							
PPs	375	4.07	5.20	12.30	12.46	16.37	17.09
SEOs	173	6.94	7.50	4.28	3.70	11.22	9.94
Oil and gas							
PPs	200	3.52	5.00	2.00	0.00	5.52	6.00
SEOs	118	6.47	6.50	-2.13	-3.45	4.35	3.81
High-Tech and Biotech							
PPs	114	2.40	0.00	11.97	9.09	14.37	13.07
SEOs	120	5.86	6.00	6.87	4.03	12.73	10.05
Other Industries							
PPs	110	2.85	0.00	17.96	15.07	20.81	18.44
SEOs	58	5.96	6.71	7.91	7.53	13.86	12.31
Whole Sample							
PPs	799	3.53	5.00	10.45	9.09	13.98	13.72
SEOs	469	6.42	7.00	3.78	2.31	10.20	8.03
Panel B: Segmentation along Hot and Cold Issues Markets							
SEO sample; periods defined using the number of SEO issues (three-month moving average)							
Cold	100	6.33	6.50	3.45	2.03	9.78	6.69
Neutral	148	6.53	7.00	2.87	2.12	9.39	8.02
Hot	221	6.39	7.00	4.54	2.78	10.93	8.63
PP sample; periods defined using the number of PP issues (three-month moving average)							
Cold	196	2.11	0.00	8.62	7.06	10.72	9.09
Neutral	289	2.89	0.00	9.49	8.26	12.38	12.00
Hot	314	4.99	6.00	12.49	12.00	17.48	17.10
Panel C: Segmentation Following Use and Reputation of Investment Bankers							
PPs							
Prestigious	28	5.99	6.00	2.71	5.57	8.69	10.82
Nonprestigious	440	6.02	6.00	10.33	9.09	16.35	15.48

None	331	0.00	0.00	11.27	9.09	11.27	9.09
SEOs							
Prestigious	105	5.34	5.25	1.88	0.76	7.22	6.29
Nonprestigious	364	6.73	7.50	4.33	3.63	11.06	9.14

Sources: Fpinfomart.ca and Datastream.

for i = 1 to n, where Y_i respectively is TC/P_i, D/P_i, or GS/P_i. Variable definitions are provided in Table 19.2.

The three cross-sectional regressions are successively estimated via OLS. Table 19.6 illustrates the results from the estimated coefficients. As predicted, the dummy variable DPP is significantly positive: once we control for the characteristics of the issue and the issuer, the private equity issue total cost is 611 basis points higher than the public equity issue cost. All things being equal, private issues are more costly than public issues. The difference is largely due to the discount, which is far higher for PPs. The mean difference of 6.57 percent may be attributable to the existence of information asymmetry and higher information costs for PPs. The lower liquidity of PPs may be another determining factor. However, given that the resale restriction period was set at two months for securities authorities and four months for stock markets, it is unlikely that these restrictions explain the greater discounts.

Table 19.6 confirms that size is inversely related to gross spreads. Issuance is more expensive for small issuers that have a higher level of information asymmetry and a greater risk. In particular, issuers reporting no sales at the issue time are subject to a higher commission. Companies in a better financial situation, reporting more than twelve months of cash at issue time, incur less direct and indirect costs. Oil and gas companies incur significantly lower discounts and total costs. Hot issue market periods are positively but not significantly related to total costs and discounts. Direct costs seem unaffected by these intense issue periods, owing to a higher volume of self-placements during these periods.

Direct PPs

Table 19.5 indicates a large difference between the total costs of direct PPs and those involving nonprestigious investment bankers. These two groups comprise 96.5 percent of all placements. We run Model 3 using our sample of PP restricted to the direct PPs. Models 2 and 3 are similar, but in Model 3 we exclude the variables DNU_i and DH_i. The variable definitions are the same as in Model 2:

$$\begin{aligned} Y_i = {} & a_o + a_1\, DPP_i + a_2\, Log(GP_i) + a_3\, DOG_i + a_4\, DHT_i + a_5\, PA_i + \\ & a_6\, Rm12m1_i + a_7\, Pre\ B/M_i + a_8\, DCASH_i + a_9\, DNS_i + a_{10}\, Lambda_i + e_i \end{aligned} \tag{3}$$

Table 19.6 Total, Indirect, and Direct Equity Issue Costs Models

Dependent Variable	TC/Pi		D/Pi		GS/Pi	
Intercept	14.24		1.36		12.88	
	1.07		0.10		13.08	***
DPP	6.11		6.57		−0.46	
	3.47	***	3.74	***	−3.56	***
Log (GP)	0.81		1.13		−0.32	
	0.95		1.32		−5.02	***
DOG	−6.30		−6.51		0.21	
	−2.82	***	−2.92	***	1.28	
DHT	0.62		0.43		0.19	
	0.24		0.16		0.99	
DNU	−3.83		2.36		−6.19	
	−1.93	*	1.19		−42.28	***
PA	−0.99		−1.22		0.23	
	−0.65		−0.81		2.08	**
Rm12m1	10.65		10.25		0.40	
	2.71	***	2.62	***	1.37	
Pre B/M	−0.65		−0.60		−0.05	
	−1.49		−1.38		−1.49	
DCASH	−5.46		−5.24		−0.22	
	−3.57	***	−3.44	***	−1.96	**
DH	1.90		1.94		−0.04	
	0.92		0.94		−0.26	
DNS	1.57		1.24		0.33	
	0.92		0.73		2.63	***
Lambda	−38.79		−33.80		−4.99	
	−0.81		−0.71		−1.41	
Adjusted R square	4.74		5.17		70.87	
F value	5.78	***	6.23	***	234.75	***

Notes: The model is: $Y_i = a_o + a_1\ DPP_i + a_2\ Log(GP_i) + a_3\ DOG_i + a_4\ DHT_i + a_5\ DNU_i + a_6\ PA_i + a_7\ Rm12m1_i + a_8\ Pre\ B/M_i + a_9\ DCASH_i + a_{10}\ DH_i + a_{11}\ DNS_i + a_{12}\ Lambda_i + e_i$ for i = 1 to n, where Y_i respectively is TC/P_i, D/P_i, or GS/P_i. TC/Pi stands for the total cost of issue i divided by the gross proceeds; D/Pi is the discount of the issue i divided by the gross proceeds; GS/Pi is the gross spread of the issue i divided by the gross proceeds. DNU_i is a dummy variable that equals 1 if the issue is self-underwritten and 0 otherwise. PA_i is a dummy variable that equals 1 if the financial statements are audited by a prestigious auditor and 0 otherwise. Lambda is the Heckman's lambda estimated in the probit model. The other explanatory variables are defined in Table 19.2. The sample includes 799 PPs and 469 SEOs completed in Canada between 1993 and 2003. Figures below the coefficient estimates are student's t coefficients. *** means significant at 1%, ** means significant at 5%.

We report the results in Table 19.7. The main result is that the coefficient of the DPP dummy is no longer significant in Model 1, which explains the total cost. The coefficient is positive and significant in Model 2, which explains the discount, and negative and significant in Model 3, which explains the gross spread. The other variables play the same role as in Model 2. The implication of this result is that the total costs of issuing SEOs or direct PPs do not differ statistically, when the other variables are included in the model.

Conclusions

The Canadian stock market offers an opportunity to examine variation in the costs of public and private equity issues by SMEs. We use the European Union's definition of SME. The firms in our sample exhibit median total assets of CAN$7 million, and they are in the development stage. More than 80 percent of these firms are not profitable. Using a sample of 799 PPs and 469 SEOs issued between 1993 and 2003, we document that total issue costs are greater for PPs than for SEOs. However, for both groups of issuers, the issue cost of equity is lower in Canada than in the United States for firms of comparable size. The difference between U.S. and Canadian issues is economically significant and can be estimated at 5.90 percent of the gross proceeds for SEOs and 11.33 percent for direct PPs. This situation, which prevails also for IPOs, can be traced to the dedication of the Canadian stock market to small and medium-size firms. Our observations confirm that the Canadian stock market has developed efficient tools for the financing of small firms. However, this does not imply that the financing of very small firms is a profitable investment opportunity for investors. The postissue returns are generally abnormally low, following PPs and SEOs of small Canadian firms (Carpentier et al. 2010a; Carpentier and Suret 2010).

The cost difference between both types of financing is lower than in the United States. The mean (median) total cost is 13.98 percent (13.72) for PPs, and 10.20 percent (8.03) for SEOs. As expected, the average (median) discount is much larger for PPs than for SEOs: 10.45 percent versus 3.78 percent (9.09 versus 2.31). We examine whether these average differences persist once we control for variables related to the characteristics of the issuers (size, industry, financial conditions) and the issues (auditor, conditions of the issue market). Our results confirm that, on average, PP total costs are 611 basis points higher than SEO total costs. The difference is mainly attributable to the difference in discount.

Generally the PP discount is explained by the lack of liquidity, induced by regulation. The lock-up period is short in Canada. The fact that the resale restriction period imposed on PP buyers was reduced from twelve to four months in 2002

Table 19.7 Total, Indirect, and Direct Equity Issue Costs Models, Excluding Intermediated PPs

Dependent Variable	TC/Pi		D/Pi		GS/Pi	
Intercept	7.34		−7.17		14.51	
	0.45		−0.44		15.08	***
DPP	1.89		8.57		−6.67	
	0.95		4.30	***	−57.04	***
Log(GP)	0.88		1.18		−0.30	
	0.94		1.26		−5.45	***
DOG	-5.48		−5.91		0.44	
	-1.97	**	−2.14	**	2.69	***
DHT	−1.48		−1.88		0.40	
	−0.49		−0.62		2.27	**
PA	0.81		0.72		0.09	
	0.40		0.36		0.78	
Rm12m1	10.99		10.47		0.53	
	2.36	**	2.25	**	1.94	**
Pre B/M	−0.67		−0.60		−0.07	
	−1.43		−1.28		−2.66	***
DCASH	−5.14		−4.75		−0.39	
	−2.49	***	−2.31	**	−3.22	***
DNS	0.73		0.37		0.36	
	0.33		0.17		2.73	***
Lambda	−21.50		−11.31		−10.19	
	−0.45		−0.24		−3.66	***
Adjusted R square	1.66		3.53		82.20	
F value	2.25	***	3.70	***	341.45	***

Notes: The model is:
$Y_i = a_0 + a_1\ DPP_i + a_2\ Log(GP_i) + a_3\ DOG_i + a_4\ DHT_i + a_5\ PA_i + a_6\ Rm12m1_i + a_7\ Pre\ B/M_i + a_8\ DCASH_i + a_9\ DNS_i + a_{10}\ Lambda_i + e_i$ for i = 1 to n, where Y_i respectively is TC/P_i, D/P_i, or GS/P_i. TC/Pi stands for the total cost of issue i divided by the gross proceeds; D/Pi is the discount of the issue i divided by the gross proceeds; GS/Pi is the gross spread of the issue i divided by the gross proceeds. DNU_i is a dummy variable that equals 1 if the issue is self-underwritten and 0 otherwise. PA_i is a dummy variable that equals 1 if the financial statements are audited by a prestigious auditor and 0 otherwise. Lambda is the Heckman's lambda estimated in the probit model. The other explanatory variables are defined in Table 19.2. The sample includes 331 direct PPs and 469 SEOs by SMEs completed in Canada between 1993 and 2003. Figures below the coefficient estimates are the student's t. *** means significant at 1%, ** means significant at 5%.

can partially explain the low PP discount for small firms in Canada. Our analysis by subperiod indicates that the cost difference between PPs and SEOs has been reduced after the implementation of MI 45–102. For policymakers, this implies that the resale restriction has a cost for small PP issuers.

For managers of a small public firm facing the choice of PP, the implications of our work are as follows. First, everything being equal, PPs cost more than SEOs because of the higher PP discount: the cost difference is about 6 percent of the gross proceeds. This is the cost of benefiting from the shortest time frame and the reduced disclosures offered by PP. These issues can be closed very quickly, and sometimes are completed in a few days or weeks. In contrast, SEOs require several months. Ceding 6 percent of gross proceeds to reduce the issuance time by six months may be rational for firms with a high equity cost of capital.[14] However, we do not consider the hidden costs of PP. This type of financing does not contribute to increasing the stock liquidity, which an SEO can do by increasing the float. Last, managers should consider direct PPs. They are less costly than PPs underwritten by nonprestigious investment bankers. We do not observe significant cost differences between direct PPs and SEOs. The discount is larger in direct PPs, but this increase is roughly equivalent to the gross spread incurred in SEOs.

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Notes

1. PPs can induce intangible costs because they do not contribute to increase the stock liquidity, unlike SEOs. Because liquidity is priced by the market, the choice of a PP has an intangible cost. SEOs can also induce intangible costs because they often contribute to more dispersed ownership. We cannot consider these dimensions.
2. Gross spread refers to the fees that underwriters and placement agents receive for arranging and underwriting the offering. It is the difference between a security's public offering price and the price paid to the issuer by an underwriter. Other direct costs are not considered in this study. They generally represent a small fraction of total costs. Bajaj et al. (2002) estimate these costs at 0.43 percent of gross proceeds for preferred stocks. PPs do not incur such costs because they do not require a prospectus.
3. According to the TSXV corporate finance manual, "Agent means a Person that, as agent, offers for sale or sells securities in connection with a distribution and that is permitted pursuant to applicable Securities Laws to perform this function." Agents can be investment banks but also boutique advisory and placement firms.

4. Timing and the hot-cold story are not clear substitutes. Some firms or industries can perform badly during hot issue markets. For example, during the high-tech bubble young resources firms did not perform well. During the years after the bubble burst several resources firms exhibit high returns even if the period is classified as cold. This explains why both the hot-cold dimension and the pre-announcement return are considered in the models.
5. The definitions are available online at http://ec.europa.eu/enterprise/enterprise_policy/sme_definition/index_en.htm.
6. Because several distributions exhibit strong skewness, we discuss and test the differences on the median.
7. Following Carter and Manaster (1990), we consider the most active investment bankers in Canada prestigious. During the period under study seven investment bankers subscribed to 60 percent of all the initial and seasoned equity issues and are thus considered prestigious. We also consider as prestigious U.S. firms with a score higher than 7 in Carter et al. (1998). We add to this group international investment bankers such as BNP Paribas, Deutsche Bank, and UBS, based on the list of the most active investment bankers worldwide provided by Ljungqvist et al. (2003, Table 2, p. 73).
8. We consider the Big Five (during the 1990s) and Grant Thornton as prestigious auditors. Public Accounting Reports ranks Grant Thornton fifth in 2003.
9. However, we observe strong variations in issue size and sector distribution over time. For example, the median gross proceeds of SEOs is CAN$3.7 million in 1999 and CAN$18 million in 1998. The percentage of the total gross proceeds of SEOs and PPs issued by resource companies increased from less than 37.07 in 1998 to 52.93 in 2003. These fluctuations are consistent with issue cycles associated with a strong sector-based dimension (Helwege and Liang 2004).
10. Classical ratios like ROE are impractical in this case because several firms report negative shareholders' equity before the issue. Ratio of net income to assets cannot be used because the large majority of issuers report negative values on this variable.
11. To assess the robustness of our results to the estimation of the discount, we also use the market price the day before the pricing date, as did Maynes and Pandes (2008). We observe material differences neither in values nor in coefficients, and we do not report these results.
12. Our estimations are in line with the previous results of Maynes and Pandes (2008), who estimate the discount at 11.01 percent during the period preceding the implementation of MI 45–102 and 5.19 percent from the implementation of MI in November 2001 to December 2005. As the regulatory changes had no impact on public offerings, we do not include a dummy associated with this change in our models. However, when we run the costs model on the pre- and post-MI period, we observe a decrease in the coefficient of the dummy associated with the PP. This indicates that the MI 45–102 has reduced the cost difference between PPs and SEOs.
13. It is possible that the consideration of other direct costs biases the results slightly, in favor of PPs. Although the costs of prospectus preparation should be higher for public issues, it is likely that the short-form prospectus distribution rule and related forms and companion policies that came into effect in all Canadian jurisdictions on December 31, 2000, have significantly reduced the costs associated with the prospectus.
14. According to Goldfarb (2003, 244), "A PIPE transaction can be closed in fifteen to forty-five days, compared to the typical four- to six-month timetable for a syndicated

offering." In Canada, according to TSX policy 4–1, the expedited private placement filing system permits issuers to obtain acceptance of certain smaller transactions within a few business days.

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PART VI

LISTED PRIVATE EQUITY

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CHAPTER 20

RISK AND RETURN CHARACTERISTICS OF LISTED PRIVATE EQUITY

CHRISTOPHER BROWN AND
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Private equity has arrived as a major component of the alternative investment universe and is now an established asset class. Investments in private equity have experienced significant growth, with around $3.2 trillion raised globally since 2000 according to Preqin, of which $500 billion remains unspent. As many investments are leveraged, the economic impact has been even greater. Conventional wisdom in the investor community seems to be that private equity has been a superior investment during the past years.

Private equity can broadly be defined as investing in securities through a negotiated process and can be subdivided into buyouts, growth capital, and venture capital. Private equity is typically a transformational, value-added, active investment strategy. It aims for attractive absolute returns and calls for a specialized skill set. The main reason to invest in this asset class is the prospect of outperformance of, and low correlation with, quoted equity markets.

There are two main ways of investing in private equity: unquoted limited partnership funds (LPFs) and listed private equity vehicles (LPEs). The main advantages of LPEs are liquidity, accessibility, lower fees, a flexible investment policy, ease of monitoring, and the opportunity to buy at a discount. The main disadvantages are less efficient cash management, less disclosure, sometimes a less favorable tax

regime, and less choice. The main advantages of LPFs are their efficient use of cash, occasional co-investment rights, and tax transparency. The main disadvantages are poor liquidity, more administration managing commitments and cash flows, less diversification, high minimum commitments, and higher fees.

Another relevant issue is the measurement of the risk and return characteristics of private equity (PE) investments. It can be very difficult to compare the performance of LPFs with stock market indices given the timing of the cash flows. One of the standard metrics for assessing the performance of an LPF is the internal rate of return (IRR), which is the discount rate applied to the cash inflows that makes them equal in value to the cash outflows. It cannot be compared directly with the return on an index unless one assumes the cash outflows to be invested in a stock index.

A number of recent papers have addressed the characteristics of LPE (see, e.g., Bergmann et al. 2010; Cumming et al. 2010; Jegadeesh et al. 2010), but despite the growing importance of LPE we are still lacking a comprehensive analysis of this asset class. This chapter aims to fill this gap in the literature.

The remainder of this chapter is presented as follows. We first discuss the differences between LPFs and LPEs before presenting the main characteristics of listed private equity, its advantages and potential shortcomings, and its development over recent years. We also investigate the experience of LPEs during the recent financial market downturn. In a final step, we discuss the issue of private equity performance measurement and present the most recent findings in the empirical analysis of LPE performance by examining its risk and return characteristics. We conclude with an outlook on the listed private equity universe, especially by considering the recent financial market turmoil and liquidity dryout.

Investing in Private Equity

The main way of investing in private equity has been through fixed-life limited partnerships funds (LPFs), which draw down capital to invest as required and return it when the underlying investments are realized. The other is by investing in listed companies that make private equity investments (LPEs). Table 20.1 compares and contrasts these two vehicles.

Limited Partnership Funds

LPFs are the most common way of investing in private equity. The private equity firm serves as the fund manager, or general partner (GP). Investors, or limited

Table 20.1 Comparison between LPFs and LPE

Limited Partnership Funds (LPFs)	Listed Private Equity (LPE)
Generally have a fixed life of 10 years	Usually evergreen (unlimited life)
Fixed size	Usually fixed size, but can raise additional capital (both debt and equity) or return capital
Fees typically 1.5–2% of commitments +20% carry	Fees usually lower than LPs; shareholders often own management company
Can be difficult to sell	Shares can be sold in the stock market
Direct funds tend to be focused	Usually well diversified by deal type and vintage
Active management of drawdowns/ exposure required	Easy to rebalance portfolio private equity exposure
Sometimes offer co-investment opportunities	No co-investment opportunities
Tax transparent	Company usually subject to at least some tax, though rarely material
Detailed information on the investments available to investors	Produce reports and accounts, but full disclosure often limited by commercial sensitivities
Investors can sometimes participate on advisory boards	Shareholders not able to participate in the management of the company
Investors can change managers, but usually have few others powers	Shareholder democracy
Initially invest at asset value	Can often buy at a discount
Realization proceeds are returned to investors	Realization proceeds usually reinvested, although some listed funds return capital. There can be cash drag pending reinvestment.
High minimum size of investment—and investors need to invest in a wide range of direct funds to diversify properly	No minimum size and diversification can be achieved with a smaller number of holdings

Notes: This table compares and contrasts the two ways of investing in private equity: through fixed-life limited partnership funds (LPFs) and through listed companies that make private equity investments (LPE).

partners (LPs), consist largely of institutional investors such as pension funds, family offices, and endowments. At the inception of the partnership LPs must contractually commit their "blind" investment to the partnership. The GP can then draw down this commitment from LPs and invest the capital when required. The GP has a specified time period in which to invest the committed capital, usually around five years, and LPs have no input into the investment decisions. The capital is returned to the LPs when cash is received from the underlying investee companies. The bulk of the returns will be generated when portfolio companies are sold, typically after at least five years, but sometimes sooner.

The GP will typically charge LPs annual management fees ranging from 1.5 to 2 percent of their commitment. There is also a performance fee, called a carried interest. Typically once the LPs' initial capital has been returned in full *and* a hurdle rate of 8 percent of invested capital has been achieved, the GP will share around 20 percent of the cash flows, with 80 percent being paid to the LPs.

While the limited partnership structure enables the efficient deployment of LPs' capital, it is not without its problems. First, the likely portfolio diversification of the partnership is limited by the GP's capabilities and the available management styles and strategies. The intense workload generally prevents funds from investing in more than a handful of companies. Second, the minimum investment tends to be at least $5 million, which prevents many investors from participating. Even for midsize institutions, the amount of capital needed to construct a sufficiently diversified portfolio of private equity funds is substantial. Moreover GPs charge relatively high management fees and, if the fund performs well, take a sizable proportion of the realized returns. Third, limited partnerships may be marketed only to institutions and very wealthy individual investors, which restricts the audience.

Fourth, the LP commits capital at inception, and the investment period, during which the GP draws down and invests capital, may run for half the life of the fund. Yet in many cases the so-called harvest period, when profits are realized and cash redistributed, begins before all the capital has been invested. Thus an investor may decide to commit a specific amount of his portfolio to private equity, but at any point in time it is unlikely that more than 50 to 75 percent of these commitments will actually be deployed in private equity assets. An unintentionally high cash position tends to act as a drag on the return. A process of "overcommitment" often serves to minimize the effect of this "cash drag," specifically through committing more than the target allocation to the asset class. However, determining the amount of overcommitment, and then maintaining it, can be a very difficult exercise because of the unpredictability of the underlying cash flows over time. In some circumstances LPs can find themselves with a bigger than intended investment in private equity, as the commitment remains fixed but the value of their other investments declines; this is the so-called denominator effect. The disparity between a fund's gross and net internal rate of return may also cause the J-curve effect in the investor's return profile. During the earliest stages of a fund, the net investment returns are often negative because fees are front-end-loaded, calculated on the basis of the value of the total commitment. A potential write-down of underperforming investments might also have a negative impact in these early stages. Over time, though, the impact of the fees is diluted as more capital is drawn down and invested, which narrows the difference between the gross and the net IRR.

Fifth, investors have difficulty measuring their interim returns on LPFs, because no ready market price exists for the underlying portfolio. Nonetheless GPs will provide a "fair value" of the portfolio, but this estimate could be affected by the GP's upward biases. Only after all the investments have been fully realized is the true IRR observable.

Sixth and finally, the major caveat relates to liquidity. When an investor signals a desire to invest, a contract records this wish. If at any point over the course of the fund, the LP cannot fulfill the obligation to supply funds or requires access to already invested capital, the options become extremely limited. One possibility is to negotiate with the GP for an early release, usually by paying a substantial penalty; another option is to sell the LP interest to another investor. The secondary market created by this latter option appears to be growing, but secondary trading remains a relatively new phenomenon that cannot provide a guaranteed exit strategy prior to the natural termination of the fund.

Investing in a fund of private equity funds can eliminate many, but not all, of these concerns. Although there is the undeniable impact of a second layer of fees paid to the fund-of-funds manager, there are material benefits. A fund of funds can provide cost-effective diversification to investors with neither the time nor resources to invest in a variety of single-manager funds. This way the investor's capital outlay should provide exposure to a range of investment strategies, vintages, sectors, and geographies. Since funds have varying life cycles and investment programs, their capital demands are extremely unlikely to be identical; hence the effect of any drag on cash should be smoothed. The point of liquidity, however, is still not resolved; an investor wishing to release her capital early from an unquoted fund of funds is subject to the same restrictions as in the case of single-manager investments.

Listed Private Equity

Listed funds are the other main way to invest in private equity. These have generally been established to provide "permanent capital," with the proceeds from the sales of investments being recycled into new transactions rather than returned to the investor, though increasingly they are returning at least some capital to investors. Listed private equity (LPE) has a number of advantages over limited partnerships. First and most important is liquidity. LPE shares can be bought and sold at any time, just as shares in any listed company can be, with no minimum size of investment or lock-up. This enables investors to fine-tune their exposure to the sector, as well as monitor its value more accurately. However, the liquidity can sometimes be patchy and hard to deal with; this was certainly the case after Lehman's failure in 2008, when liquidity in general dried up. Despite this, there should always be a price at which a trade can take place—even if it is one that is not to the seller's liking.

Second is their "evergreen" or permanent capital nature. With no fixed life, there is less of a J-curve effect, and it is possible to buy into an existing seasoned portfolio (in effect a listed secondary). While some LPE IPOs have raised "blind pools" of cash, other sponsors have built portfolios containing funds that have varied maturities and then transferred the funds to the company at IPO. This significantly reduces the LPE's cash position after its IPO and thus also lessens the

J-curve effect as well as the drag from excessive cash. As evergreen companies, LPEs can also take an even longer term and more flexible investment approach than LPFs. This might be more appropriate for investments in venture capital or infrastructure, neither of which, in our view, is ideally suited to the normal ten-year horizon of an LPF.

Third, LPEs must comply with strict reporting requirements and corporate governance rules, which means they can be more investor-friendly than their unlisted counterparts. Regular reports of net asset value, the benefits of daily mark-to-market pricing, and interim and final financial accounts provide valuable insights about the portfolio beyond their regular reporting requirements. In addition, LPEs have an obligation to make the market aware of any price-sensitive events.

Fourth, without a minimum investment requirement, LPE shares are accessible to smaller investors who also suffer no restrictions on their ability to sell their investment. Yet these LPEs provide a notable way for firms to showcase their talents, so some of the most highly regarded private equity managers run LPE companies.

Fifth and finally, depending on where the investor is based, the exchange-traded closed-end investment company structure is often tax-efficient. For example, many of the LPEs listed on the London Stock Exchange are incorporated in Guernsey. Unlike open-ended offshore funds, Guernsey closed-ended entities can be structured so they are not collective investment schemes (as defined by the Financial Services and Markets Act 2000) and so, for U.K. investors, gains on the disposal of shares should be subject to capital gains tax, rather than income tax, as may be incurred by U.K. investors in offshore open-ended funds. Moreover, for some investors, the fact that listed private equity funds may make dividend payments could be valuable.

A listing on an exchange also offers at least two advantages for private equity firms: a diversified investor base and a locked-in capital base. LPEs are easier to access than LPFs and thus are owned by a much wider range of investors, including smaller institutions as well as private individuals. The permanent capital of an LPE fund is also valuable for the PE firm as there is no need to raise a new fund every few years. Moreover they can invest over a longer time horizon than an LPF, which would give them a competitive edge in certain types of deals.

However, the picture is not all rosy, as LPE companies face obstacles too. Although the shares are priced on a daily basis, the underlying assets are valued quarterly at most (as is the case with most LPs), so share price movements tend to be less smooth than those of other traded investment funds. LPEs usually trade at a discount to their net asset value (NAV) but do sometimes trade at a premium. For both LPEs and LPFs, the NAV represents just an estimate of the value of the underlying assets, which are conducted only infrequently and with a time lag. The realization of investments causes major changes to the NAV; ironically this effect can create a burden, because the proceeds of a realization are usually retained rather than distributed to investors. Thus an LPE vehicle may build up significant cash in

the portfolio because it lacks immediate investment opportunities. Investors then might perceive this cash will act as a drag on performance and demand the return of their capital. The ability to buy at a discount can, however, be an advantage relative to LPFs. Although the latter can also be bought in a "secondary market" of sorts, this is a specialized market effectively open only to a small number of players. And while the pricing can move quite closely with LPE discounts, this is not always the case, as we will see in our discussion of the LPE experience during the recent financial crisis.

Characteristics of European Listed Private Equity

Over the past few years there has been an increase in the number of private equity companies seeking to list in Europe. The modern buyout industry is relatively young, but LPE companies such as 3i Group, Electra Private Equity, and Pantheon International Participations are three of the longest established names in the entire sector. Indeed 3i Group's origins date back to 1945, while Electra in its current form was formed in 1976 and Pantheon in 1982. The three businesses were listed in 1994, 1976, and 1987 respectively. Over the years a number of private equity companies have sought long-term capital via a listing, culminating most recently in 2006–2007 when KKR raised $5 billion on Euronext Amsterdam and was rapidly followed by Apollo's AP Alternative, Conversus Capital, NB Private Equity, and HarbourVest Global Private Equity.

Table 20.2 provides an overview of the current European LPE universe as of August 2010. The sector globally is small relative to LPFs, with a market capitalization of $44 billion versus LPFs committed capital of over $1 trillion. Nonetheless within the listed sector there is a broad range of direct companies with different investment strategies and criteria, as well as a number of funds of funds (FoFs), which offer greater diversification.

Table 20.2 shows that the London Stock Exchange has historically been the most popular exchange for alternative investment funds, offering either its Official List or the Alternative Investment Market (AIM) as viable options and more recently the Specialist Funds Market (SFM). There are more than fifty companies listed on these markets, with a market value in the region of $16.8 billion. It was Euronext, however, that captured the most recent and high-profile launches, starting with KKR in 2006. Although KKR has now moved its listing to the NYSE, Euronext remains host to four companies, all managed by globally recognized private equity managers, with a combined market value of $2.6 billion. However, two of those—NB Private Equity and HarbourVest Global Private Equity—are also

Table 20.2 The European LPE Universe

Exchange	No	U.S. $bn
London Stock Exchange (LSE) Official List	26	13,979
LSE Specialist Fund Market (SFM) (includes Euronext Dual Listed)	2	745
LSE AIM	26	2,082
Swiss SE	6	4,261
Euronext Amsterdam (excludes Dual Listed)	2	1,832
France	4	5,364
Sweden	2	10,559
Other European exchanges	5	5,276
Total	**73**	**44,098**

Notes: This table shows the current European listed private equity universe as of August 2010 and differentiates between the exchanges on which LPEs are listed.

Source: J.P. Morgan Cazenove/Morningstar.

listed on the SFM. The Swiss Stock Exchange was boosted by the listing in 2006 of Partners Group, which comprises the bulk of the $4.3 billion market capitalization of the Swiss-listed private equity companies. France and Sweden are home to some large LPEs as well, although several of the largest companies in these markets own substantial holdings of common listed equities. Table 20.2 indicates that in total our universe comprises seventy-three LPEs with an estimated total market value of around $44 billion.

Categorizing Listed Private Equity

Listed private equity encompasses a wide range of activities. But at the highest level we can split the universe into those vehicles that invest directly in the underlying companies and those that invest in a range of funds managed by others—the funds of funds. FoFs generally aim to offer a more broadly diversified exposure across these categories and across vintage years to minimize the J-curve effect and to reduce specific risks. There are of course hybrids that invest directly and as FoFs, to better diversify their company's assets. Table 20.3 provides some descriptive statistics on the European LPEs in our sample, which form the basis for our empirical analysis.

In terms of where the underlying assets are actually invested, Table 20.3 shows that buyouts are the most common, but there are infrastructure and private debt specialists, among others. Within these very broad categories, direct LPEs will often specialize by company size, geography, and industry.

Table 20.3 The European LPE Universe: Descriptive Statistics

LPE Company	Country of Quote	Investment Focus	Deal Focus	Deal Size (EV)
Direct				
3i Group	UK	Global	LBO/GC	€5m–1bn
3i Infrastructure	UK	Global	Infrastructure	n/a
Aberdeen Development Capital	UK	UK	GC/LBO	£3m–10m
Altamir Amboise	France	Mainly France	LBO/GC/VC	Small to mid
AP Alternative	Netherlands	Global	LBO/DEBT	Large
Ashmore Global Opportunities	UK	Emerging Markets	SS	Entire range
Aurora Russia	UK (AIM)	Russia	GC	Small
Better Capital	UK (AIM)	Mainly UK	Turnaround	Small
Candover Investments	UK	Mainly Pan European	LBO	€200m–2,000m
Capman	Finland	Pan Nordic/Baltics	PE Fund manager	Small to mid
Deutsche Beteiligungs	Germany	Mainly Germany	LBO/GC	€50m–250m
Dinamia	Spain	Spain/Portugal	LBO/GC	€50m–300m
Dunedin Enterprise	UK	UK/Europe	LBO	£10m–50m
Electra	UK	Mainly Pan European	LBO/GC	Up to €500m
Eurazeo	France	Mainly France	LBO/QPE	Over €300m
GCP Infrastructure	UK	UK	Infrastructure	Small
Gimv	Belgium	Europe	LBO/VC/GC	Up to €125m
Greenwich Loan Income Fund	UK (AIM)	Mainly US	DEBT	Small
HarbourVest Senior Loans Fund	UK	Europe	DEBT	Small
Henderson Diversified Income	UK	Global	DEBT	Entire range
Hg Capital	UK	Pan European	LBO	€75m–500m
HSBC Infrastructure	UK	Global	PFI/PPP	n/a
International Public Partnerships	UK	Global	PFI/PPP	n/a

Table 20.3 (Continued)

Intermediate Capital Group	UK	Pan European/Asia	MEZZ	Small to mid
Investor AB	Sweden	Mainly Nordic	QPE/LBO/GC	Large
JZ Capital	UK	US	LBO/MEZZ/ DEBT	Small
LMS Capital	UK	UK and US	GC/VC	Small
Northern Investors	UK	UK	LBO/GC/VC	£5m–15m
OFI PEC	France	Mainly France	LBO	€15m–75m
Partners Group	Switzerland	Global	PE Fund Manager	Entire range
Promethean	UK (AIM)	UK	LBO/GC/SS	Small
Ratos	Sweden	Pan Nordic	LBO/GC	SEK 250m–5bn
SVG Capital	UK	Mainly Pan European	LBO	Large
Wendel	France	Mainly France	LBO/QPE	Large
FoFs				
Aberdeen Private Equity	UK	Global	LBO/SS	Entire range
Absolute Private Equity	Switzerland	Global	LBO/VC/SS	Entire range
APEN	Switzerland	Global	Mainly LBO	Entire range
Castle Private Equity	Switzerland	Mainly US	LBO/VC/SS	Entire range
Conversus Capital	Netherlands	Mainly US	LBO/VC/SS	Entire range
F&C Private Equity	UK	Global	LBO/MEZZ	€50–500m
Graphite Enterprise	UK	Mainly Pan European	LBO	Entire range
HarbourVest Global Private Equity	UK (SFM)/ Euronext	Global	LBO/VC	Entire range
Henderson Private Equity	UK	UK	LBO/LPE	£10–100m
J.P. Morgan Private Equity	UK	Global	LBO/RE/VC/ SS	Entire range
Mithras	UK	UK	LBO	Over £50m
NB Private Equity	UK (SFM)/ Euronext	Global	LBO/SS/GC/ VC	Entire range
Pantheon International Participations	UK	Global	LBO/VC	Entire range

Princess Private Equity	UK/Germany	Global	LBO/VC/SS	Entire range
Private Equity Holding	Switzerland	Global	LBO/VC/SS	Entire range
Private Equity Investor	UK	US	VC	n/a
shaPE	Switzerland	Global	LBO/VC/SS	Entire range
Standard Life European Private Equity	UK	Pan European	LBO	€100m–1bn

Notes: This table shows the current European listed private equity universe as of August 2010 and differentiates LPEs between whether they are direct investors or funds of funds (FoFs), their country of quote, their investment focus, deal focus, and target deal size (enterprise value). AIM is the London-based Alternative Investment Market. SFM stands for the London-based Specialist Funds Market. LBO = leveraged buyout, GC = growth capital, VC = venture capital, SS = special situations, MEZZ = mezzanine, QPE = quoted private equity.

Corporate Structure and Governance

LPEs usually have a corporate structure, although there are a few, like Conversus Capital and AP Alternative, that are structured as limited partnerships funds. This is a structure that was designed to appeal to investors familiar with that structure, although, in contrast to unlisted LPFs, there was never any intention at the outset to return capital to investors. Most LPEs are therefore permanent capital vehicles, although there are a number that are following a realization strategy under which they will return capital to their shareholders over time, for example Conversus Capital, Candover, and Henderson Private Equity.

Many LPEs employ a third-party firm to manage their assets, although there are a number who carry out these activities in-house, such as 3i, Gimv and Eurazeo. But even where the asset management is subcontracted, the listed vehicle will usually take the manager's name.

As listed companies, LPEs are controlled by a board of directors, and where the asset management is subcontracted there will normally be an independent board that is responsible for making sure that the manager discharges its duty as well as overseeing the company's strategy. The board will usually have the power to terminate the management agreement, although in practice this occurs very rarely and would result in a compensation payment to the manager, the quantum depending on the length of the contract.

Listed companies clearly have shareholders, and in the vast majority of cases they will have a vote. This theoretically empowers them to fire the board and the manager, although in reality this is a rare occurrence. LPE companies have improved shareholder communications and transparency over recent years, and many have joined LPEQ, an organization that was established by a number of companies in the sector to promote listed private equity as an asset class.

Capital Structure

Companies are of course able to borrow, and LPEs are no exception, with most of them having access to credit lines, or in some cases—for example 3i and Wendel—issuing their own corporate bonds. As the underlying portfolio is illiquid it is important to have access to funding in order to be able to make new investments without having to sell existing ones. Figure 20.1 shows the leverage levels in our European LPE sample as of August 2010, where leverage is expressed as the cash/(net debt) as a percentage of the most recent NAV.

As Figure 20.1 indicates, some LPEs have large cash balances, while others are leveraged. Generally LPEs are reluctant to gear for the long term as the underlying portfolio companies are themselves leveraged. When equity markets fell sharply in 2008, structurally geared LPEs such as Wendel and 3i Group were left looking vulnerable, the latter having to undertake a rights issue to improve its finances.

Where the LPE company is contractually committed to making new investments—most commonly where it has committed capital to a limited partnership—it is clearly important to have access to liquidity, either in the form of cash, bonds, listed holdings, or a credit line. During the boom years FoFs commonly committed more capital to LPs than they had available in the form of liquid assets and in some cases more than their NAV. These overcommitment strategies were meant to ensure that the portfolios would always be fully invested, since historically more cash had come back from the portfolios than had been drawn down.

But as equity markets collapsed after the Lehman failure in 2008, many FoFs realized that an overcommitment strategy might prove fatal. A combination of falling NAVs could put pressure on the amount they could borrow under their credit facility, while at the same time realizations were drying up. Any increase in cash calls—perhaps to keep existing portfolio companies afloat—might have been impossible to fund. Rather than bet that markets would turn around, several of the worst affected companies took preemptive action. This included selling existing funds in the secondary market at big discounts (e.g., Standard Life European Private Equity and Pantheon), negotiating an exit from the fund to which they had committed with the GP (e.g., SVG Capital and Candover), raising equity capital (e.g., 3i and SVG Capital), or issuing preference shares (e.g., F&C Private Equity and APEN).

The surprisingly quick recovery in the stock market eased the pressure on banking covenants. Cash flows were also helped by lower than expected drawdowns, combined with good realizations. However, many funds still have significant commitments and relatively small bank facilities so are vulnerable to any mismatch between distributions and drawdowns. Figure 20.2 shows the extent to which our sample of LPE companies' undrawn banking facility and liquidity cover their remaining undrawn commitments as of August 2010.

The lower the ratio, the more the company needs to rely on distributions from its underlying portfolio to fund new investment. However, we caution against reading too much into these statistics, as commitments are seldom drawn in full,

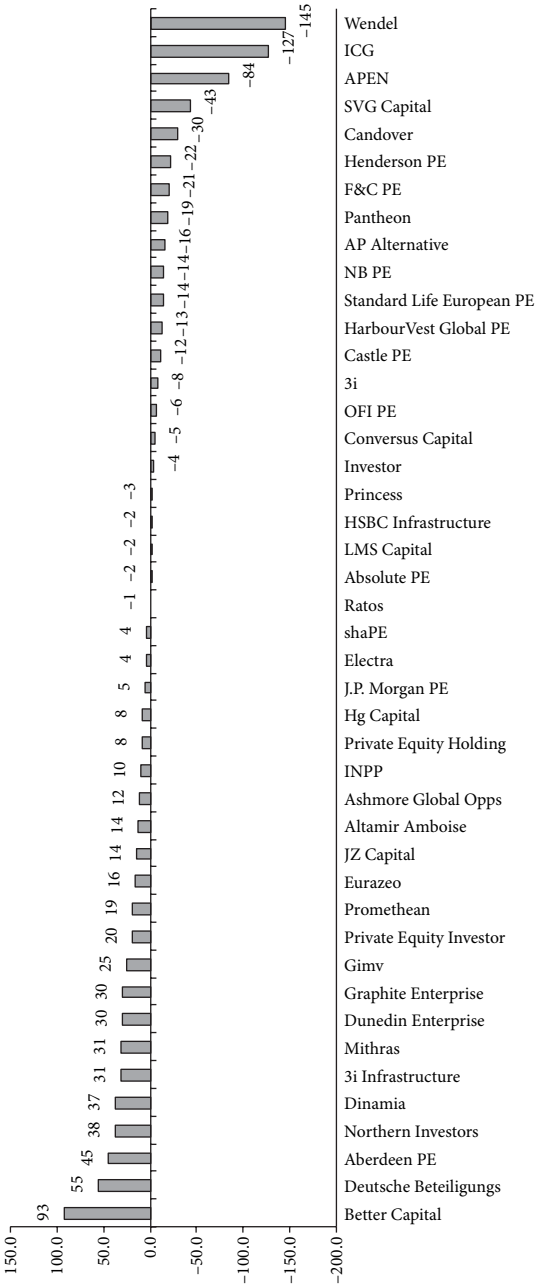

Figure 20.1 European LPE: Net leverage as percentage of NAV.
This figure shows the leverage levels in our European LPE sample as of August 2010, where leverage is expressed as the cash/(net debt) as a percentage of the most recent NAV.

but also because some of the bank loans that result in high cover are relatively short term in nature and when refinanced are likely to be both smaller and more expensive. Investors also need to look at the maturity of the portfolio, with older portfolios tending to be more cash-generative than newer ones.

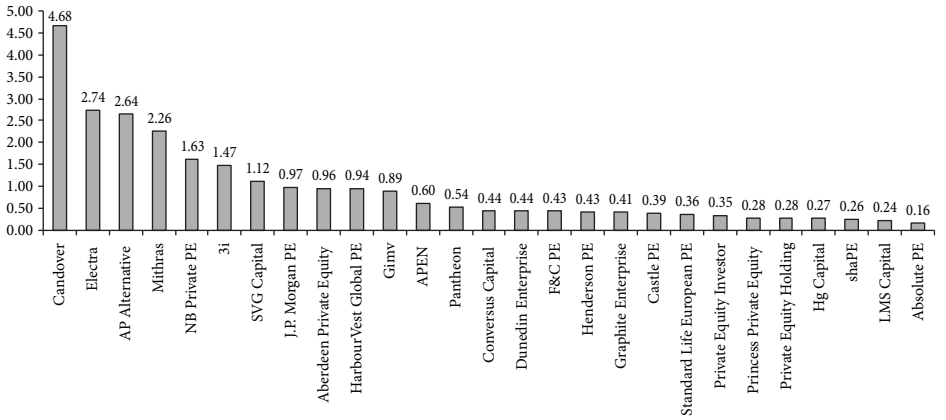

Figure 20.2 European LPE: Commitment cover.
This figure shows the extent to which our sample of LPE companies' undrawn banking facility and liquidity covers their remaining undrawn commitments as of August 2010. The lower the ratio, the more the company needs to rely on distributions from its underlying portfolio to fund new investment.

Regulation, Taxation, and Dividends

Regulation varies from jurisdiction to jurisdiction, but all LPEs are required to publish detailed audited reports and accounts. The sector in Europe does, however, face the specter of tighter regulation as a result of the Alternative Investment Fund Managers Directive, although this also affects unlisted funds. It is extremely difficult to predict the final outcome given that the final details have yet to be agreed.. But given that LPEs are already well regulated and familiar with what EU regulation involves, in reality there should be marginal rather than life-changing adjustments.

All LPEs report at least twice a year, and many formally report quarterly. This is less common in the United Kingdom, where biannual reporting is the norm. However, U.K. companies have to provide two interim management statements a year, which sometimes contain the bare minimum of information but often will go into considerable detail. A number of the larger and more recently listed FoFs report monthly NAVs, which are often accompanied by a detailed fact sheet for investors.

LPE companies report in a wide range of currencies and will usually have some exposure to "foreign" assets, resulting in foreign exchange risk. Few actively hedge, and therefore foreign currency movements impose an extra layer of volatility on the underlying portfolio performance, though of course this is also true for unlisted LPFs.

LPE companies can of course pay dividends, but many companies within the sector choose not to make any payments to shareholders. Private equity is not typically an activity receiving a high regular income. But as Figure 20.3 shows, as of August 2010, there are some LPEs that target a yield component, most notably the

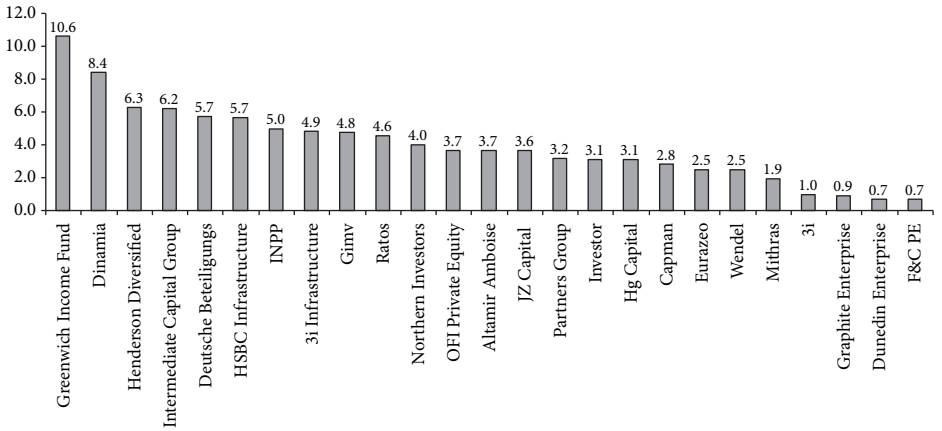

Figure 20.3 European LPE: Dividend yields.
This figure provides an overview of those LPEs in our sample that paid dividends as of August 2010. Many companies within the LPE universe chose not to make any payments to shareholders.
Source: Thomson Datastream/J.P. Morgan Cazenove.

infrastructure sector and private debt. A number of cash-rich companies, however, have returned excess capital to shareholders via special or occasional dividend payments.

Many U.K. LPEs are structured as "investment trusts," which means they do not have to pay any tax on their capital gains, provided they follow certain rules. They potentially have to pay corporate tax on their income, although this can be mitigated by their interest payments and expenses. Recent legislation ("streaming") enables them to pass through interest income to shareholders without the deduction of tax, which is then taxable in the hands of the end investor. A growing number of London-listed LPEs are actually domiciled in the Channel Islands, where their portfolio does not suffer any material tax on either income or capital, with any dividends being paid gross. It is difficult to generalize about the tax status of European LPEs, which differs from country to country, but many are also exempt from paying tax on their capital gains, or do so at relatively low rates.

Fees

There are as many fee structures as there are LPEs, but we can make some broad generalizations. Table 20.4 shows the fees charged by our sample of listed FoFs.

Companies that manage the assets in-house will simply bear the cost of employing the team to run the money, but to mimic the carry structure in an LPF they will usually use a combination of share options and bonuses, with the

Table 20.4 Fee Structures: FoFs

Company	Base Fee	Performance Fee
Absolute Private Equity	1.8% pa of NAV	10% of increase in NAV
APEN	None	None
Castle Private Equity	2% on NAV	10% pa on lower of increase in NAV or share price, subject to HWM ($12.50 per share)
Conversus Capital	1% pa of portfolio ex cash plus 0.5% of unfunded. 1/3 cash; 2/3 deferred profits	10% of NAV, with 7% hurdle, with catch up. HWM over three-year period (current HWM is $28.54)
HarbourVest Global PE	None on top of underlying	None on top of underlying
Henderson Private Equity	1.25% on assets in LPs and directs, 0.75% on other assets	10% over 8% with HWM
F&C Private Equity	0.9% of gross assets	10% over an 8% IRR between August 1, 2006 and June 30, 2010–13
Graphite Enterprise	1.5% of NAV ex cash plus 0.5% pa of outstanding commitments (ex Graphite funds)	None
J.P. Morgan Private Equity	1% of gross assets	7.5% over 8%, with HWM
Mithras	Self-managed	Self-managed
NB Private Equity	1.5% pa of NAV ex cash	7.5% over 7.5% with full catch up and HWM
Pantheon	1.5% pa up to £150m, 1% over £150m, 0.5% pa on undrawn commitments up to 100% of the portfolio (ex Pantheon funds)	5% in any increase in NAV over each year to 30/6 over 10% hurdle, with HWM
Private Equity Investor	0.75% pa advisory fee	None
Princess Private Equity	1.5% pa of NAV (less cash) plus an additional 0.25% pa for secondaries and 0.5% pa directs	None for primaries or listed. 10% of realized gains for secondaries, 15% for directs subject to an 8% preferred return (with full catch up)
Standard Life European PE	0.8% of net assets	Founder shares exercisable at 100p if the NAV total return exceeds 10%, with full conversion at 15% pa from 2006–11

Notes: This table provides a broad generalization of the fee structures of the listed private equity fund of funds (FoFs). We differentiate between a base fee and a performance fee. All fees are based on available information as of August 2010. NAV = net asset value, HWM = high-water mark, IRR = internal rate of return.

rewards dependent upon the performance of the portfolio and the shares. Where the management is subcontracted, there will usually be a base fee on the assets in the region of 1 to 2 percent, plus a performance fee, usually with a hurdle rate. The FoFs will levy a fee on top of the usual 1 to 2 percent and 20 percent charged by the underlying managers. We would note that in Table 20.4 the base FoF fee is between 1 to 2 percent of NAV, with a performance fee in the region of 5 to 10 percent.

Valuation Policy

Most, but not all, LPE companies provide shareholders with a "fair value" of the portfolio. With U.K. LPEs this forms the basis of the balance sheet. The fair value is usually calculated using the International Private Equity and Venture Capital Valuation Guidelines, which are compliant with International Financial Reporting Standards and should reflect the price at which an investment would change hands between a willing buyer and a willing seller, which would normally include a liquidity discount. The valuation is normally open to some degree of interpretation, but the market will look at the uplift that the company achieves relative to its carrying value when it sells an asset and draw its own conclusions about the company's valuation policy. Anecdotally most LPEs report uplifts to carrying value when selling assets, although that is sometimes as a result of having written down the asset previously. Continental European companies will often present consolidated accounts wherein its underlying "subsidiary" companies are consolidated. These accounts are difficult to interpret, so most will also produce a separate aggregate fair value of the portfolio. However, some companies will also

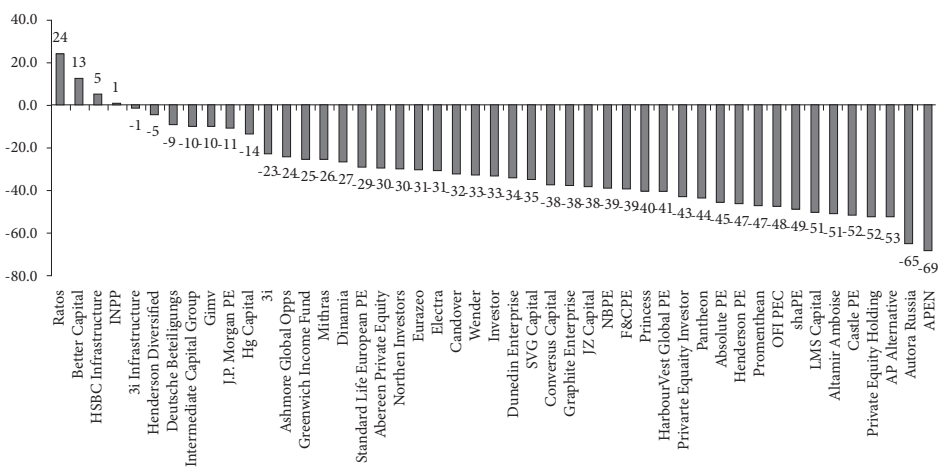

Figure 20.4 European LPE: Discounts/premiums by company.
This figure shows the discounts and premiums for each LPE company in our sample as of August 2010.

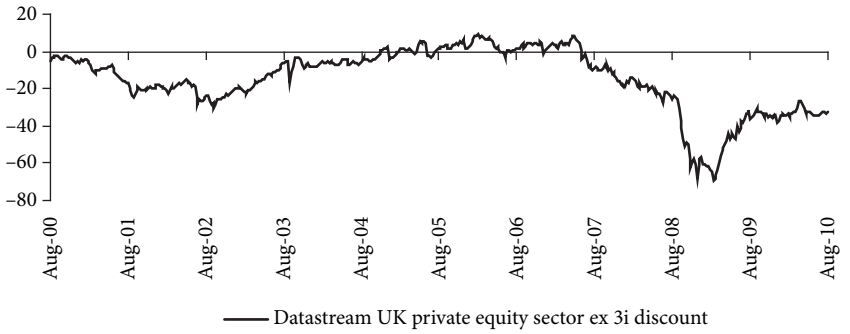

Figure 20.5 U.K. LPE: Cumulative discount/premium.
This figure shows the weighted average discount/premium of the U.K.-quoted LPE companies over the period August 2000–to August 2010.
Source: Thomson Datastream.

provide underlying data on the portfolio companies so that analysts can estimate their own fair value.

Discount Protection

Figure 20.4 shows that most of the European LPEs rarely trade at NAV. Moreover Figure 20.5 indicates that although our subsample of U.K. LPEs traded at a premium during 2006–2007, most of the time they will trade at a discount, with that discount reflecting a number of factors, including the performance record of management, the NAV lag, expenses, leverage, liquidity, realizations, market sentiment, and the amount of commitments.

Given this phenomenon it can be difficult for companies to raise new equity capital since to do so dilutes the NAV of those who do not buy the new shares. To overcome this problem we have seen companies use a variety of so-called discount control mechanisms (DCMs), techniques to limit the extent of any discount. These have included taking the power to buy back shares, making periodic tender offers, offering continuation votes, and having fixed-life structures. All of these DCMs aim to return capital to investors. In general these mechanisms do not have a great track record of success in the closed-end fund sector. This is principally because the ability to return capital to investors depends on being able to sell the underlying portfolio. Discounts, however, are normally at their widest when liquidity in the market dries up, and at these points it is very difficult to convert the portfolio into cash at a price that would be acceptable to shareholders. Hence when they are needed most, DCMs cannot be implemented. Nobody has yet devised a foolproof scheme for eliminating discounts while preserving the integrity of investing for the long term in illiquid assets. We note in passing that this also applies to the market for unlisted LPFs. While most investors would value their LPF holdings at NAV, we saw in the downturn that they were worth anything but.

The Experience in the Downturn

The case for private equity used to be fairly straightforward: it offered the prospect of outperformance of quoted equity markets with low correlation to them. But the high prices paid for buyouts—particularly at the large end of the market—and the excessive levels of leverage taken on during the boom period of 2005–2007 has led many to question the private equity model. It is therefore worth reexamining the rationale for private equity investing, how it has performed so far, and whether it remains an attractive proposition.

Finance theory would suggest that private equity should outperform because the private market is less informationally efficient than public markets. In public markets all investors have access to the same information at the same time—unless they are insiders. In the private market much more detailed information is available to private equity managers, which would be considered inside information in public markets. They can use this information legitimately to make their investment decisions and plan their strategy. This lowers risk and stacks the odds in favor of the private equity manager. There are very big differences between being a private company and having a quote, as shown in Table 20.5.

Table 20.5 indicates that the key advantage of private equity–backed companies is that a relatively small number of highly incentivized shareholders, including management, are all pulling in the right direction. They have far more control over their own destiny than public companies—assuming of course that the banks are not in the driving seat.

The Financial Market Turbulence of 2007–2009

So in the light of the tumultuous events of the past years, do these arguments still hold water, and what do the performance figures look like? Addressing first the theoretical, we believe that the private ownership and governance model still makes a lot of sense. It is certainly easier for a proactive owner to push through change without the distractions of doing so in the public gaze. And when company management fails, it is easier to replace them in the private arena.

However, where the industry has undoubtedly suffered is its propensity to employ large amounts of leverage. Leverage was readily available in the boom times with few or no covenants attached. Many private equity firms were happy to take on large amounts of leverage knowing that with prices quite high it was the only way to earn an acceptable return on equity. The tax shield is of course a key advantage of debt financing and in theory leads to a lower overall cost of capital and higher equity returns. But collectively the industry failed to take account of the risk of bankruptcy, which also rises with the amount of leverage.

Table 20.5 The Case for Private Equity

Public Companies	Private Equity–Backed Companies
Large number of small shareholders.	Small number of large shareholders.
Most shareholders have little or no operational input.	Private equity investors often on the board and involved operationally.
Shareholders may have different agendas	Shareholders usually have the same agenda.
Difficult for management to have a meaningful economic interest in the company. Incentives of managers may differ from outside shareholders.	Management normally very highly incentivized, and the incentives are aligned with the interests of other shareholders.
Public companies often concentrate on short-term earnings figures; can make it hard to take tough decisions if it hits earnings.	Shareholders not concerned about taking tough decisions if that is the optimal strategy.
Need to seek shareholder approval for large transactions; costly, slow, and time-consuming.	Very quick decision-making process means companies can move swiftly and keeps costs down.
Tend not to use much leverage; suboptimal weighted average cost of capital?	Happy to employ large amounts of leverage; probably closer to optimal capital structure.
Difficult for shareholders to change management.	Very easy to effect management change.
Increasing regulation and disclosure requirements.	Less regulation and little disclosure (pre AIFMD!).
Public companies losing the most talented managers to private companies.	Potential high rewards tend to attract very talented individuals to both private equity and private equity–backed companies.

Notes: This table compares and contrasts the main characteristics of public companies versus private equity backed companies.

The impact of the collapse in equity and debt markets was in some cases to reduce the enterprise value of the company below the par value of the debt, making the equity worthless on paper. Of course if the company is a going concern and the debt is covenant-light, then there is some time value in the equity, even if it is underwater. But there is a good chance that the investment will indeed be worthless, with at best a recovery of cost. As well as an unfavorable movement in multiples, earnings will in many cases have fallen sharply, pushing the equity even further underwater.

As evidenced by KKR, Candover, 3i, and SVG Capital, to name a few direct private equity companies, several holdings have been written down to zero even though the companies are still trading. The name of the game for these PE firms is to keep their investment alive by cutting costs, restructuring the debt, buying in the debt cheaply, and/or injecting extra equity.

With write-downs in their private equity portfolios and declines across other assets classes, many investors in private equity funds found themselves with commitments to invest that they might not have been able to finance. As Figure 20.6 shows, this led to a sharp widening of discounts in the secondary market for limited partnerships as a number of investors were forced to offload their fund interests. With a potentially large number of sellers, uncertainty about asset values, and a shortage of buyers, it was not surprising that discounts on both LPFs and LPEs widened to around 60 percent.

The crisis led to some corporate activity in the LPE sector, with European Capital being acquired by the parent of its manager, American Capital, Partners Group Global Opportunity converting into an open-ended fund, and more recently Candover and Henderson Private Equity announcing plans to liquidate. SVG Capital, 3i Group, JZ Capital, APEN, and F&C Private Equity all needed to raise capital to repair their stretched balance sheets.

The recovery in equity markets during 2009 and the first quarter of 2010 reduced much of the pressure on the sector. Rising earnings multiples and in some cases higher earnings before interest, taxes, depreciation, and amortization resulting from early action to cut costs enabled valuations to recover, though on a two-year view they remain well below peak levels. Banks have generally behaved rationally and have allowed companies to work through their problems. As we have seen, overcommitted funds of funds took action to reduce their commitments in the secondary market and/or raised new capital to strengthen their balance sheets. Recovering NAVs, lower investment levels than expected, and surprisingly good realizations as mergers and acquisitions picked up also helped improve LPEs' financial position.

Some LPEs were able to go on the offensive; Electra Private Equity, J.P. Morgan Private Equity, and NB Private Equity all raised capital by issuing zero dividend

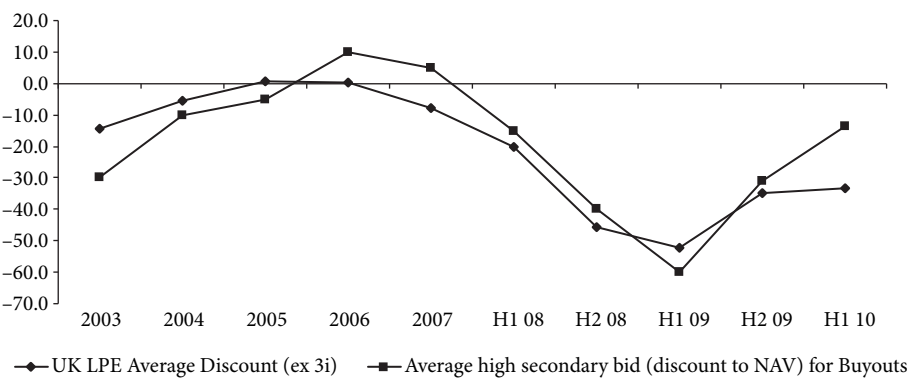

Figure 20.6 Secondary LP pricing versus LPE discounts.
This figure provides the percentages of the secondary limited partnership fund pricing against the LPE discounts/premiums over the period 2003–2010. 3i has been stripped out of our sample.
Source: Cogent/Thomson Datastream.

preference shares. These pay rolled-up interest at maturity and rank ahead of the ordinary shares, but behind any bank debt. They do not have any covenants and do not initially dilute the NAV of the ordinary shares, although the implied interest cost dilutes ordinary share returns over time. The listed infrastructure funds, which trade near to NAV, have been able to issue more equity, while Hg Capital and J.P. Morgan Private Equity somewhat controversially raised equity at a modest discount to NAV. There were even two new launches: Jon Moulton's Better Capital, targeting turnarounds, and HarbourVest's Senior Loan Fund, focusing on private equity debt.

Despite this, discounts for LPEs remain stubbornly wide—around 28 percent for directs and 35 percent for FoFs, according to our data—but what is curious is that the discounts at which secondary LPs change hands have narrowed during H1 2010. LPE discounts and secondary prices have been closely correlated, particularly in respect of 2008–2009. This presents some interesting options for FoFs, who could rebalance their portfolio or sell some of their assets at relatively narrow discounts and use the proceeds to repurchase their own shares on a much wider discount, thus locking in the arbitrage. However, this is not without risk, as it would increase any gearing and could increase unfunded commitments as a percentage of NAV.

We illustrate this in Table 20.6 with a simple hypothetical example. We show a geared FoF with four funds, trading on a 40 percent discount with unfunded commitments representing 50 percent of NAV. It sells one of these Funds (Fund A, in this case representing 10 percent of NAV) at a discount to its NAV of 15 percent. It uses the proceeds to buy back 14.1 percent of its own shares on a 40 percent discount, and the NAV is enhanced by 5 percent. Leverage rises from 10 to 11.1 percent. In this case unfunded commitments as a percentage of NAV remain at 50 percent. Overall this should represent a win-win situation for LPEs that are able to take advantage of pricing in this way, which should in turn be the transmission mechanism through which discounts converge in the LPE and secondary LP markets.

Performance

While many more recent private equity funds will be doing well if they return their investors' capital, that does not mean that new investors cannot make money. With the NAVs of most of the troubled investments written down to zero, investors today have a free option on any recovery in valuations. But there is still some skepticism about those valuations, as is evidenced by the wide discounts on listed private equity stocks. Table 20.7 presents the most recent U.S. data to get a sense of how private equity has been performing.

Table 20.7 shows that 2009 was clearly a good year for U.S. PE returns, but in most cases they lagged quoted markets, with the exception of upper-quartile buyout returns, which were a whisker ahead. Taking a five-year view, the picture

Table 20.6 Selling Funds at a Discount and Buying Back Shares

	Before		After	
	$m	Unfunded Commitment $m	$m	Unfunded Commitment $m
Buyout Fund A	10.0	5	0.0	0
Buyout Fund B	33.3	15	33.3	15
Buyout Fund C	33.3	15	33.3	15
Buyout Fund D	33.3	15	33.3	15
Total assets	110.0	50	100.0	45
Net debt	−10.0		−10.0	
NAV	100.0		90.0	
NOSH m	100.0		85.8	
NAV per share $	100.0		104.9	
Price $	60.0			
Discount %	−40.0			
Unfunded as % of NAV	50.0		50.0	
Gearing % of NAV	−10.0%		−11.1%	
NAV uplift %			4.9%	
Discount for Fund A %	15			
Proceeds from sale of Fund A $m	8.5			
NOSH bought m	14.2			

Notes: This table provides a hypothetical example of a fund of funds that rebalances its portfolio or sells some of its assets at narrow discounts in order to repurchase its own shares on a much wider discount, thereby locking in the arbitrage.

is more encouraging, with strong performance across the board, but particularly so in the top performing buyout funds, which are well ahead of public markets, with IRRs of 21.7 percent pa versus –1.7 percent pa from the S&P 500, although the IRR analysis may flatter private equity returns relative to quoted markets. Taking a ten-year view, quoted markets have been very disappointing, with the S&P 500 returning –2.7 percent pa. In this context overall buyout returns and venture returns of 4.6 percent pa and 1.1 percent pa are relatively good. But again it is the upper quartile that has impressed, with 17.3 percent pa from buyouts and 20.2 percent pa from venture.

Turning now to Europe, Table 20.8 indicates that PE performance during 2009 also lagged behind quoted markets, even in the upper end of the buyout space. But over five and ten years, the buyout sector has been a good performer—indeed better than in the United States and well ahead of quoted markets, particularly in

Table 20.7 U.S. Private Equity Performance

	1 year	5 Year	10 Year
Overall U.S. Private Equity $	12.3	5.5	4.0
Upper Quartile $	23.7	16.8	17.6
U.S. Venture $	4.6	4.3	1.1
Upper Quartile $	13.4	11.3	20.2
U.S. Buyout $	11.0	5.3	4.6
Upper Quartile $	21.3	21.7	17.3
LPX 50 TR $ (listed private equity)	52.3	−5.5	−5.5
Russell 2000 $	25.2	−0.8	2.2
Dow Jones $	18.8	−0.7	−1.0
S&P 500 $	23.5	−1.7	−2.7

Notes: This table shows the horizon returns of U.S. financial instruments as of December 2009. Public market returns do not reflect the cash flows used to calculate the private equity returns, and therefore a direct comparison may not be meaningful.
Sources: Thomson Reuters (pooled IRRs, percent pa); Bloomberg (total returns, percent pa).

the upper quartile. European venture has been disappointing, with even the upper quartile returns not particularly exciting in absolute terms, although they are still ahead of even worse quoted markets.

The returns in Tables 20.7 and 20.8 are partly based on current portfolio valuations, and skeptics might point out that realized returns could be lower than this. However, it is also true that they could improve upon this, and thus far all the

Table 20.8 European Private Equity Performance

	1 year	5 Year	10 Year
European Private Equity €	7.7	6.5	5.2
Upper Quartile €	15.9	25.8	18.7
European Buyout €	7.2	8.3	8.0
Upper Quartile €	11.8	28.2	20.8
European Venture €	1.0	0.8	−1.8
Upper Quartile €	21.9	10.7	8.2
LPX Europe €	44.3	−3.6	−4.2
MSCI Europe €	29.4	1.0	−3.9

Notes: This table shows the horizon returns of European financial instruments as of December 2009. Public market returns do not reflect the cash flows used to calculate the private equity returns, and therefore a direct comparison may not be meaningful.
Sources: Thomson Reuters (pooled IRRs, percent pa); Bloomberg (total returns, percent pa).

Table 20.9 LPE Performance 2007–2010 (U.S.$)

June 30, 2007 to June 30, 2010	Price TR %	NAV TR %
3i Infrastructure	−3.5	−3.2
INPP	−9.0	−11.0
HSBC Infrastructure	−10.9	−19.9
Mithras	−13.0	1.0
Deutsche Beteiligungs	−13.9	−0.5
Hg Capital	−21.8	−11.0
J.P. Morgan PE	−26.5	−20.5
Gimv	−27.1	−28.6
Private Equity Holdings	−27.7	6.8
Northern Investors	−38.2	−20.7
Private Equity Investor	−43.1	2.1
Electra Private Equity	−43.7	−22.4
Conversus Capital	−46.1	−1.6
F&C Private Equity	−47.4	−26.0
Princess Private Equity	−49.1	−14.5
Graphite Enterprise Trust	−49.9	−28.9
Castle Private Equity	−53.1	−16.2
3i Group	−54.0	−60.7
Absolute Private Equity	−54.2	−7.7
Dunedin Enterprise	−54.4	−33.2
Eurazeo	−57.9	−44.4
LMS Capital	−58.6	−33.5
Pantheon International	−60.5	−22.2
Dinamia	−64.3	−46.5
AP Alternative Assets	−65.3	−30.1
Standard Life European PE	−66.5	−42.0
JZ Capital Partners	−66.9	−58.1
Wendel	−70.2	−58.2
Candover Investments	−72.1	−61.6
SVG Capital	−87.3	−83.5
APEN	−89.4	−63.3
Simple Average	*−46.6*	*−27.7*
Weighted Average	*−52.5*	*−33.7*
LPX Europe	*−57.3*	*n/a*
MSCI AC World	*−27.1*	*n/a*

Notes: This table shows the price and NAV total return for the main European Listed PE companies over the three years since the credit crunch started to hit equity markets. It is sorted by price total return.
Source: Morningstar.

evidence points to private equity as being a better performer than quoted markets. But the most interesting point that comes out of these statistics is that picking the top-performing managers is crucial.

Turning now to LPE, the story is different. Table 20.9 presents the share price and NAV total return for the main European LPE companies over the three years since the credit crunch started to hit equity markets. There is a wide dispersion in returns, but on a weighted average basis the sector has underperformed the MSCI World Index in NAV and particularly price terms.

Figure 20.7 shows that LPEs performed strongly up until the credit crunch bit in mid-2007. From the inception of the LPX Europe index in December 1993 to June 2007, the USD total return has been 16.7 percent pa. The FTSE Europe total return was 12.6 percent pa over the same period. The LPX Europe has been more volatile, however, with a standard deviation of 15.7 percent against 14.6 percent for the FTSE Europe.

However, since mid-2007 most of this outperformance has been given back, and relative volatility has increased. Figure 20.7 indicates that from the end of June 2007 to the end of August 2010 the LPX Europe and FTSE Europe total returns have been –22.1 percent pa and –11.6 percent pa, respectively, with standard deviations of 40.4 and 26.9 percent, respectively. Over the entire period of 1993 to 2010 the annualized total return of the LPX Europe has been 8.1 percent, against 7.5 percent pa from the FTSE Europe, with a standard deviation of 23.0 and 17.8 percent, respectively.

To finish on a more positive note, we note that LPE has bounced back strongly. Since equity markets bottomed in March 2009, the LPX Europe is up 125.7 percent to the end of August 2010, while the FTSE Europe total return is up 54.9 percent.

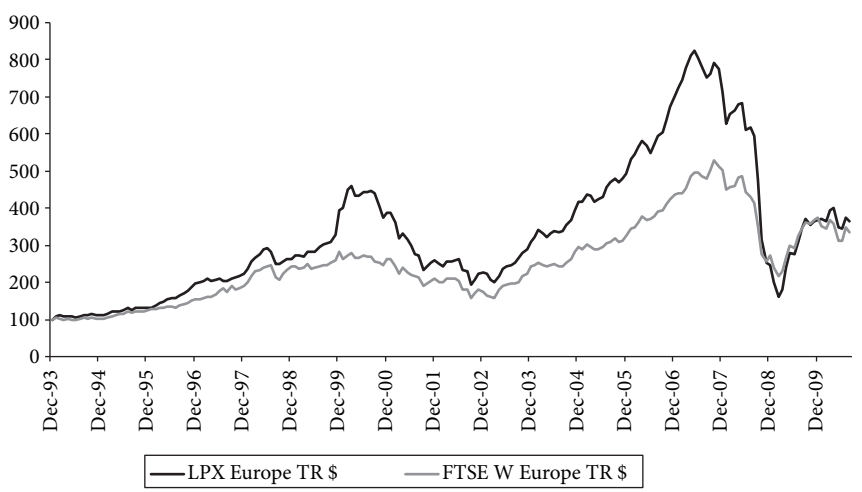

Figure 20.7 LPX Europe total return index in USD.
This figure shows the USD performance of the LPX Europe total return index (dividends reinvested) over the period December 1993 to August 2010. The index is rebased to 100 as of December 1993.
Source: LPX/Thomson Datastream.

Although discounts have narrowed substantially, they remain wide in absolute terms as Figure 20.5 showed. Our findings indicate that either underlying private equity returns will over time converge with the fall in quoted markets, or LPE is simply very cheap. We believe the latter is more likely than the former. This is borne out by the Cogent data on the secondary market for LPFs, where discounts have also narrowed substantially during the first half of 2010. However, there are risks on the horizon, notably the need for private equity companies to refinance the "wall of debt" and of course the increasing risk of a double-dip recession and deflation, all of which would present challenges for the sector.

Risk and Return Characteristics of Listed Private Equity

Although private equity has experienced rapid growth, the risk-and-return profile of this asset class is not well understood. Many news stories in the media suggest that PE investments yield higher returns than traditional asset classes. (See, for instance, Phalippou and Gottschalg 2009 for examples of several news articles that report high expectations for returns from PE investments.) A number of academic papers also report superior returns for private equity investments. Ljungqvist and Richardson (2003) find that private equity investments outperformed the S&P 500 by 6 to 8 percent, and Kaplan and Schoar (2005), Cochrane (2005), Peng (2001), and others also find that private equity funds outperform the S&P 500.

However, all these papers focus exclusively on nonlisted private equity funds, and thus face serious obstacles. First and by definition, the value of investments in private equity is not known publicly at all times and does not result from the interaction of supply and demand on a centralized market. In practice the value of investments is known at only a few specific occasions: at the start of the investment and at realization from, for example, an initial public offering or trade sale. This aspect hinders frequent valuation of the asset class. Second, the limited liquidity of private equity makes the level of return, volatility, and correlation far from directly comparable with more liquid asset classes such as stocks and bonds. Third, organized as limited partnerships, these funds are not required to report results. Market prices, which are used for traditional equity and bond research, are not available for these nonlisted entities. Finally, publication of voluntary information through databases such as Venture Economics suffers from stale pricing and aggregation of data.

A natural research extension seems to examine prices of traded securities with private equity characteristics. However, despite the fact that listed private equity funds represent a major class of financial assets, we are still lacking a comprehensive analysis of their historic performance. The recent paper by Jegadeesh et al.

(2010) aims to fill this gap by using LPE daily pricing data for a time frame of more than fifteen years. Their unique data set has several advantages. First, it is free from selection bias. Second, the authors determine the value of investments from market prices and do not rely on self-reported data for valuation. Therefore they are able to circumvent critical shortcomings of self-reported data used in previous studies.

Previous research attempted to estimate the risk characteristics of PE investments based on their cash payouts to investors and based on the valuations of these investments when they raise follow-up capital. Because it is difficult to determine the market values of all investments made by PE funds based on cash payouts or additional financing rounds for some of their investments, additional assumptions are necessary to determine the risk of these investments. The estimates of systematic risk in the extant literature seem to depend significantly on these assumptions. For example, the estimates of beta range from about 0.5 in Hwang et al. (2005) to 4.66 in Peng (2001).

In contrast, the approach by Jegadeesh et al. (2010) allows extracting the market's expectation of future returns directly from market prices. They find that the net present value of unlisted PE funds that the FoFs invest in is about 10 to 20 percent of the original investment. This result indicates that the market expects unlisted PE funds to earn long-run abnormal returns of 1 to 2 percent, net of their fees. Earlier studies document abnormal returns for unlisted PE funds that range from –6 percent (e.g., Phalippou and Gottschalg, 2009) to +32 percent (Cochrane, 2005). While these estimates are based on particular data sets used in the respective studies and additional assumptions, the results by Jegadeesh et al. indicate that the market does not expect PE funds to earn such extreme abnormal returns in the long run. In fact the authors show that any proposition that the market expects negative abnormal returns or positive abnormal returns in excess of about 5 percent in the long run are inconsistent with the market prices that they observe.

Jegadeesh et al. (2010) conclude that both listed and unlisted private equity funds that FoFs invest in have betas close to 1 and positive betas on Fama-French SMB factor. Private equity fund returns exhibit positive correlation with GDP growth and negative correlation with credit spreads. Finally, they find that market returns of listed FoFs and listed private equity predict future changes in self-reported book values of unlisted private equity funds.

Conclusion

This chapter has discussed the main characteristics and performance of listed private equity, especially during the recent financial market turbulences. In sum, the

main advantages of LPE are liquidity, a longer-term approach and flexible investment policy, lower fees, ease of monitoring, and the opportunity to buy at a discount. The main disadvantages are less efficient cash management, less disclosure, a slightly less favorable tax regime, and less choice. The main advantages of limited partnerships are their efficient use of cash, occasional co-investment rights, and tax transparency. The main disadvantages are poor liquidity, more administration managing commitments and cash flows, less diversification, high minimum commitments, and higher fees.

We have shown that the listed private equity universe provides would-be shareholders with a diverse range of investment options that can offer distinct advantages over traditional limited partnership investing. By investing in a core of limited partnership funds and then fine-tuning the overall allocation by using listed PE funds, an institution would be better able to manage its overall exposure. For smaller institutional investors and private clients, the LPF route will not usually be a practical option, and LPEs provide a useful alternative.

What have we learned from the PE experience in the downturn? The latest figures for LPFs show that they appear to have performed much better than expected during the downturn and thus far continue to outperform public markets. However, although LPE strongly outperformed quoted equities in the bull market, since the credit crunch bit in mid-2007 it has performed relatively poorly apart from the strong recovery since early 2009, and while discounts have narrowed dramatically since then, they are still very wide in absolute terms. Perhaps this reflects the risks on the horizon, notably the need for private equity companies to refinance the "wall of debt" and of course the increasing risk of a double-dip recession and deflation, all of which would present challenges for the sector. But we believe that if the underlying NAVs can continue to be validated through good exits, then discounts will narrow significantly, implying a sustained period of outperformance.

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CHAPTER 21

LISTED PRIVATE EQUITY: A GENUINE ALTERNATIVE FOR AN ALTERNATIVE ASSET CLASS

MATTHIAS HUSS AND
HEINZ ZIMMERMANN

> If it acts like a duck, assume it's a duck.
>
> William F. Sharpe (1988)

The idea of listed private equity is not new, but it is relatively unknown to investors and academics alike. This is changing, and the reasons for the growing attention to this niche of the private equity sector are simple. From an investment perspective, the advantages of listed private equity are that it provides liquidity for a generally illiquid asset class and is much more transparent than its unlisted counterpart. Enhanced transparency can substantially reduce search costs. Easy access to the asset class substantially reduces transaction costs, since the price of a share is the cost of investing in listed private equity, which is quoted on a public stock exchange. The holding costs are also far less, since with a quoted stock the investor has delegated much of the administrative burden that accompanies a limited partnership

interest. For investors who have a preference for liquidity or do not have the required resources to participate in traditional limited partnerships, listed private equity may be a viable alternative to participate in the type of returns that previously have been typically accessible only to larger institutions.

In terms of research, the majority of studies focus on unlisted (traditional) private equity. Research in this area, however, mainly suffers from the lack of availability of useful data. Despite these difficulties, a number of researchers have been successful in gathering data from various sources, ranging from commercial databases such as Thomson Venture One and Venture Economics to tailor-made data sets compiled on the private equity investment schemes of large institutional investors. The rising number of studies has provided valuable insight into an asset class whose characteristics are still little understood.

It is not only the availability of data, but also the type of data that creates drawbacks specific to the private equity asset class. Due to its nature, private equity has no market price observable, either on the fund level or for a fund's portfolio companies. Instead of objective market prices investors and researchers need to rely on the valuations provided by the private equity funds' managers. True market prices are revealed only in the infrequent events of a (buy or sell) transaction or when a company receives a new round of financing. The entire history of market prices is available only after the fund has been fully liquidated.

In contrast, listed private equity is the ideal field for researching the asset class, as it overcomes many of the drawbacks inherently connected to private equity. The idea is not new. Various academics have suggested focusing on listed investments in order to base research on unbiased, objective data. The first study on the risk and return of listed private equity investments was undertaken by Martin and Petty back in 1983. Today there is a growing segment of private equity literature that focuses on researching listed private equity. It is, however, still unexplored whether this is a valid approach.

In the absence of market prices, the basic and most common concept for describing returns in private equity is the internal rate of return (IRR) calculation. However, the IRR is not a true return measure and comparing IRRs to the returns earned on traded assets might lead to inappropriate conclusions. Risk is another dimension to consider. There is no widely accepted and appropriate standard measure for risk in private equity investments that would allow for calculating risk-adjusted returns that can be contrasted to other (traded) assets. Lacking a time series of returns, common concepts in finance cannot be applied to the private equity asset class. Academic researchers have developed several methodologies to mitigate these difficulties. However, these approaches rely on more or less stringent assumptions. As a result, empirical findings dramatically differ on this subject.

A clear understanding of the private equity asset class is not just of academic interest. If an investor is dazzled by unrealistic beliefs regarding the behavior of private equity in terms of risk, return, and correlation to other assets, it could result in incorrect investment decisions. Below we explore some of the challenges

of traditional private equity before showing how listed private equity addresses and somehow resolves some of these limitations.

Difficulties in Evaluating Traditional Private Equity

Return

The internal rate of return is the most commonly used measure in assessing the performance of private equity investments. It is defined as the discount rate, making the present value of all investment cash flows equal to zero. However, performance evaluation on the basis of IRR calculation is subject to a variety of difficulties. First and foremost an IRR is a meaningful return measure only after the full realization (exit) of a project. The calculation of the returns on investments that already have been exited is straightforward. However, things are far trickier for fully or partially unrealized investments. Due to the nature of private equity investments, the portfolio companies are privately held, so there is no market price for a private equity fund's holdings observable. The asymmetric information between general partners (GPs) and limited partners (LPs) makes it especially difficult for an investor to validate the information obtained from the private equity manager. Second, by construction a fund's IRR is naturally not the return earned by the fund's investors, as it implies a couple of assumptions that are unlikely to be met in practice.

As mentioned, performance evaluation of a private equity fund prior to its full liquidation needs to deal with both realized and unrealized investments. Thus a fund's IRR is necessarily a mixture of the return on realized projects on the one hand and the growth in net asset value (NAV) for ongoing fund investments on the other hand. The latter is difficult terrain, as the (implied) IRR basically depends on the fund manager's current valuation of an investment.

At a given frequency—typically each quarter or each year—GPs report their valuations on unexited portfolio investments to their LPs. However, valuations are not liable to any generally accepted accounting standards. Blaydon and Horvath (2002) note that it may happen that different GPs appraise the exact same investment with different values. Accordingly the (implied) IRR may over- or even dramatically understate the true return on investment. Reasons for differences in the accounting practice are manifold and diverse.

While some of the private equity funds follow a very conservative policy in assessing the value of their portfolio investments and hold the investment at cost until the next round of financing or an exit occurs, others are more aggressive in writing up their portfolio early, or are more reluctant in timely writing down poorly

performing investments, notably in times of tough market conditions. This is especially true for (first-time) funds raising money for a follow-on fund at the same time, as superior past performance attracts more investors for new projects. The private equity industry has addressed the issue of valuation practice by the development of codes of best practice, such as the Private Equity Industry Guidelines Group or the "International Private Equity and Venture Capital Valuation Guidelines" (IPEV, 2010). These guidelines aim to promote increased reporting consistency and transparency by setting out recommendations on how to value private equity investments at their fair value, which is defined as the price at which an orderly transaction would take place between market participants at the reporting date. The guides propose a number of widely accepted methodologies to determine the fair value of an investment, including the appropriate use of multiples, discounted cash flows analysis, or the price of recent investment. Though not legally binding, valuation guidelines find increasing acceptance among private equity managers.

Gompers (1996) declares that limited partners are often concerned that a private equity fund may make a small investment in a company at a higher price in order to write up the value of all previous investments in that company to the new price even though that price may not be justified. He concludes that "for most investors the only meaningful price is therefore one established in the public market" (136).

Experience and name seem to play a major role in the reporting of NAVs, as a loss of reputation is more costly for GPs with a comparatively high standing in the industry, while less experienced fund managers may be more susceptible to overvaluation of their investments. Further, differences in the legal framework account for some of the disparity in reporting NAVs for unrealized investments. Based on evidence from thirty-nine countries, Cumming and Walz (2010, 27) conclude that "less-stringent accounting rules and weak legal systems appear to facilitate overvaluation, thereby decreasing the information content of reported valuations."

Whatever the reason may be, this discussion points up that the GP's valuation may not be an ideal basis to calculate the proper return achieved on a project. Holding an investment at cost certainly does not reflect the true evolution of its value over time, nor is an overvalued investment a capable estimate to draw a meaningful conclusion about the profitability of a project. Furthermore valuations and their associated IRRs calculated are referred to as "stale pricing"; the term refers to the fact that the information is a couple of months old, which may be due to the fact that the latest NAV figures reported are held at cost, or simply that the latest report is several months old.

Clearly the closer a fund gets to the end of its life span, the more realistic the IRR figure will be, as more and more projects are fully liquidated, and hence the impact of subjective valuations decreases. But even then a direct comparison of the IRR to the return earned on traded assets is exposed to several limitations.

The IRR measures the (expected) return of the capital invested, but disregards the fact that the investor is required to hold additional cash to serve the capital calls from the GP. Fund managers typically draw down this committed capital, as investment opportunities arise. Hence there is a substantial gap between the

capital invested and the capital committed. Commitments, on the other hand, are in the majority of cases the investors' desired allocation toward private equity. The frequency at which a fund calls capital from the commitments clearly affects its IRR, as does the rate at which distributions occur.

Additionally the methodology underlying the IRR calculation implicitly assumes that interim distributions from the fund to the investor can be reinvested at the fund's IRR, which is a rather questionable assumption in the context of closed-end limited partnerships, where additional investments are not possible after the fund has closed.

Another difficulty arises when aggregating the IRR of different funds in order to monitor the sector performance (e.g., venture funds, buyout funds) or the private equity industry as a whole. It is common among both practitioners and academics to aggregate IRRs for a given vintage year by calculating the equal- or value-weighted mean or focusing on the median IRR to get an idea about the performance in a specific timeframe. For example, a fund started in 1997 will be compared to average results for funds started in 1997. However, this is an "apples and oranges" comparison, as funds tend not to have the same duration and their lives do not end at the same point. Conclusions drawn from these aggregated IRRs have to be considered with the greatest care, always keeping this important caveat in mind.

Risk

As already mentioned, most of the private equity funds follow the convention of holding their investments at book value until the next round of financing, a trade sale, or an IPO occurs. Within this setting measuring risk of private equity investments is anything but straightforward. Evaluating a fund's return volatility—the standard metric for risk in portfolio theory—fails as the volatility measure is derived from the fluctuation of market prices over time. Evidently, given the accounting practice and thus the reported valuations of the majority of private equity funds, NAVs are not an eligible substitute for market prices. Generally NAVs tend to be too low in a rising market, but may also be too high in a falling market; the implied smoothing of returns entails downward-biased risk estimates.

However, return comparisons are not economically meaningful without assessing the underlying risks. The academic literature proposes a variety of approaches to address this issue. The following overview of different methodologies proposed in various studies is not exhaustive, but provides a good indication of the various efforts that have been taken thus far to shed light on the question of risk in private equity investments.

Assigning public market comparables to the portfolio companies held by a private equity fund is one potential solution, given one has access to the detailed portfolio composition of a fund.

In order to deal with the stale pricing problem, Gompers and Lerner (1997) model the quarterly exposure of a private equity fund by estimating the interim

valuations of the portfolio companies until the next observable cash flow or the write-off of the targeted company occurs. As performance proxy, they use different indices constructed from publicly traded companies with equal three-digit standard industrial classification (SIC) codes. A similar methodology is adapted by a variety of researchers.

Ljungqvist and Richardson (2003) assign the portfolio companies of all funds in their sample to one of forty-eight broad industry groups specified by Fama and French (1997). For each of these industries, Fama and French estimate an equity beta over a five-year period. The authors assume that the leverage of the private company coincides with that of the industry, and so assign the industry beta to the portfolio company. Using the capital disbursements as weights, they finally compute the average equity beta for each fund. Gottschalg and Phalippou (2009) extent this methodology to matching the portfolio companies in their sample to industry and size. Groh and Gottschalg (2009) additionally focus on controlling for leverage risk and determine the systematic equity risk of individual transactions by combining their business risk and their leverage risk. They also model the business risk by public market comparables, using the (unleveraged) equity betas of a publicly traded peer group, and determine the leverage risk by the capital structure of the private equity (PE) transaction. The authors further account for the fact that leverage risk usually changes over the holding period, from being initially high to subsequently diminishing due to debt redemption.

Cochrane (2005) estimates risk and expected return of private equity investments from a capital asset pricing model (CAPM) by maximum-likelihood techniques. He uses a comprehensive database of venture capital investments; his analysis is based on measured returns on project level of venture capital funds from investment to IPO, acquisition, or additional financing, intentionally not filling in valuations at intermediate dates. However, as these events are more likely to happen for successful investments, Cochrane employs a methodology that simultaneously estimates the probability of such events as well as the probability that a private equity fund turns down an investment due to its poor performance. In doing so he overcomes the selection problem and corrects his estimates for the resulting selection bias. By construction the estimated return and volatility are those of individual projects. Cochrane acknowledges that fund characteristics would reflect some diversification across projects, but cannot be calculated without knowledge of the underlying correlation structure of these investments. A short summary of the studies and their empirical findings is displayed in Table 21.1.

Idiosyncratic Risk

Except for Cochrane's (2005) work, all of these studies focus on systematic risk only and so neglect the existence of idiosyncratic risks, since risk is expressed by beta factors. However, unsystematic risk might be especially vital to consider for private equity investments, both from a statistical and an economic point of view.

Table 21.1 Summary of Risk-Modeling Approaches

Author	Sample Description	Data Source	Risk Modeling	Summary of Findings
Ljungqvist and Richardson (2003)	73 mature private equity limited partnerships, raised between 1981 and 1993	Records of one of the largest institutional investors in private equity in the U.S.	Assign publicly observable industry betas on the portfolio companies.	Returns on private equity are still abnormally large even on a risk-adjusted basis.
Gottschalg and Phalippou (2009)	1,328 funds (852 base sample merged with 476 additional sample) raised between 1980 and 1993	VentureXpert	Assign publicly observable betas on the portfolio companies; matched for industry and size.	Average performance net of fees is around 3% lower and gross of fees 3% higher than the return on the S&P 500.
Groh and Gottschalg (2009)	133 buyout transactions executed by 41 different funds	Compiled from information on buyout funds made available to the authors anonymously either from general partners or through limited partners	Focus on leverage by combining business risk and leverage risk. Business risk is modeled by using the (unleveraged) equity betas of a publicly traded peer group. These are leveraged up to the determined leverage risk modeled by the capital structure of the PE transaction.	Opportunity cost of capital is 3.29% (2.79%) below the mean average (median) of the time matching S&P 500 returns.
Cochrane (2005)	7,765 venture capital companies, with 16,613 individual financing rounds	Venture One, SDC Platinum Corporate New Issues and mergers and acquisitions databases, Market-Guide, and other online resources	Maximum-likelihood estimation to a CAPM model of expected log returns.	Venture capital shows similar mean returns and volatilities as the smallest Nasdaq stocks.

Due to the (possible) idiosyncratic nature of risk of private equity investments compared to risk factors of traditional asset classes, and due to the limited diversification of private equity portfolios, it is reasonable to assume that unsystematic risk accounts for a large fraction of total risk in private equity investments. This does not yet imply that idiosyncratic risk is rewarded with a risk premium; it could still be diversified away on the level of individual investors' portfolio decisions. However, there are good economic reasons to speculate that private equity investors' portfolios are not so well diversified as is typically assumed in models about capital market equilibrium where idiosyncratic risk is not priced (e.g., CAPM or Arbitrage Pricing Theory, APT). The reason is that information (research) and monitoring costs for private equity investments are significantly higher than for traditional investments, which is rationally reflected in more concentrated portfolios. In addition investment restrictions exclude many investors from holding (and thereby diversifying) idiosyncratic private equity risks. In equilibrium this implies that idiosyncratic risks should be priced, that is, have an extra return compared to investments with the same systematic risk (see, e.g.. the model of Merton 1987). This is an empirical hypothesis yet to be tested. Jones and Rhodes-Kropf (2004) find that unsystematic risk is indeed priced in private equity investments.

In summary, while all of the attempts in the academic literature provide valuable insight into the risk characteristics of private equity investments, they all suffer from more or less realistic assumptions, and there is no consensus so far about an appropriate methodology to measure the risk for this asset class.

Correlation

Correlation is the third important factor to consider when determining the benefits from investing in an asset. Gompers and Lerner (2001, 162) state, "Many institutions, like public and private pension funds, have increased their allocation to private equity in the belief that the returns of these funds are largely uncorrelated with the public markets." From the discussion above, it is easy to see how they reached this conclusion. Again the stumbling block is the lack of market prices for these assets. Meaningful correlation figures are simply impossible to calculate without having a time series of (market) returns at hand.

A couple of institutions have created a private equity index from individual private equity transactions; Venture Economics and Cambridge Associates are among the most prominent. All of these institutions run large databases and collect cash flows and NAVs of private equity funds on a regular basis, disclosed mainly from fund managers but also from investors. The index time series is calculated from the returns earned on exited projects on the one hand and the variation in NAVs for ongoing investments on the other hand. Thus by construction these indices contain information based on market prices, but also need to include subjective valuations with all the difficulties following from the valuation practice.

Despite these problems and in the absence of market prices, correlation analysis is mostly done on the industry level by using one of the private equity indices against a public index. In this context consider again that the valuation frequency is low, typically once per quarter—and worse, the majority of valuations are stale. So if there is any fluctuation in valuations at all, it is limited to quarters rather than to an end-of-day basis, as it is for public indices.

With this background it is not surprising that such analyses find unrealistically low correlations for private equity, and the asset class appears to be an ideal diversifier. Gompers and Lerner (1997) find that the correlation between venture capital and public market prices increases substantially when the underlying portfolio is marked-to-market.

Private Equity Indices

Apparently an appropriate index would solve many of the difficulties inherent in research in the private equity area. There have been several attempts to overcome the drawbacks of the traditional private equity indices. Researchers have adopted methodologies applied in other infrequently valued asset classes, such as the real estate market; however, this raises other specific difficulties and can be regarded as a limited overall success only.

Based on the so-called repeat-sales technique, Hall and Woodward (2003) construct a venture capital index from individual transactions that measures return more accurately than do other indices that fail to account for intermittent pricing and fail to correct for selection bias. The methodology interpolates (missing) intermediate valuations and reflects the true evolution of value over time more adequately. In doing so this approach overcomes the typical problems of abrupt change in the valuation from book value to the next financing round or exit price. Because the index is calculated on a monthly basis, it offers the ability to measure the return and risk over time as well as correlations with other assets' returns.

Although this is a very powerful tool, the authors acknowledge that their index remains an index of estimated value only. The final return earned on an investment is known only after the investment has been fully realized, and an undesirable consequence is that the historical index values must be adjusted retroactively. Therefore, due to the changing influence of still active portfolio companies, it may happen that the risk, return, and correlation figures that have been calculated for a given time period are not the same figures updated for the exact same period at a later point in time.

Finally and very important, the index cannot be replicated in an investor's portfolio; this is an important feature when considering an index as a suitable benchmark against which to measure a private equity fund's performance.

Summary

The difficulties in evaluating private equity funds follow directly from the private equity business model. Private equity is a long-term investment that usually begins with the GP, on behalf of the fund, acquiring a significant interest in a private company, whether originally private or taken private from the stock market. Due to the private nature of those portfolio companies, there is no frequent market valuation observable. Market prices are revealed only at a limited number of events: the initial investment, the exit, or another round of financing. There are only cash flows observable and valuations, disclosed at a given frequency from the GP to the LP. Valuations typically do not reflect the true current value of the investments for a number of reasons and are stale. Stale pricing arises due to the low reporting frequency and the accounting practice of private equity funds. However, the fact that unrealized projects are held at book values or at cost does not imply that the value of the investment does not vary over time. Fluctuations are there, but simply not visible.

Without reliable, continuous, and objective pricing information it is especially difficult to measure risk, return, and correlation. A profound understanding of these measures is, however, crucial for integrating private equity in the framework of modern portfolio theory and in standard investment management processes.

Return may be over- or understated dramatically, depending on the market environment and the accounting practice of a particular fund. Reported returns during years of a rising market are typically biased upward. In these years, unsurprisingly, private equity funds undertake an above-average number of initial public offerings or other profitable exits. Had the portfolio been marked to market, many of the gains would have been realized in the years before the initial public offering. In the same way returns in years with challenging markets are naturally biased downward.

Risk is typically underestimated due to the failure to recognize that GP valuations are stale, which smoothes returns and biases standard statistical risk measures downward. The same is true for correlation.

Different private equity funds tend not to have a corresponding duration. So another problem arises when aggregating figures from individual funds to estimate the performance characteristics of the whole private equity industry or parts of it, be it for one sector or a distinct vintage year. These aggregated IRRs cannot be directly compared to those available for other asset classes, where risk and return can easily be calculated for any given period.

The lack of feasibility of calculating consistent risk-adjusted returns leads to difficulties when comparing private equity to other asset classes and also in comparisons within the asset class. One fund with a higher IRR may simply be exposed to more risk equivalently than a fund with a lower IRR that might provide a superior performance on a risk-adjusted basis.

All these questions are of vital relevance, not just for the academic researcher, but also for private equity investors. Gompers and Lerner (2001, 163) reach the

following conclusion: "To ignore the true correlation may lead to incorrect investment decisions. This inaccuracy may only have been a modest problem when venture capital was only a minute fraction of most institutions' portfolios. Today, endowments and pension funds are allocating 10 percent, 20 percent, or even 50 percent of their portfolios to illiquid investments such as venture capital. Not to think carefully about the risk and reward profile of venture capital is thus fraught with potential dangers."

Private Equity and Market Valuations

In order to answer the questions raised in the previous sections, it is vital to appropriately model the fluctuation in the true value of the underlying portfolio of a private equity fund. One common way to do so is to assign valuations observed for similar companies traded in the public market to the portfolio companies of a private equity fund. However, there is an alternative and probably more elegant way to observe market valuations in the context of the private equity asset class. Instead of working with proxies available from the public market, it is possible to focus on instruments where the market in fact *does* the valuation. Cochrane (2005, 4) puts this thinking in a nutshell: "The central question is whether venture capital investments behave the same way as publicly traded securities. Do venture capital investments yield larger risk-adjusted average returns than traded securities? In addition, which kind of traded securities do they resemble? How large are their betas, and how much residual risk do they carry?" Certainly the equivalent questions apply to buyout or other private equity funds accordingly.

In the private equity market, just as in any other market sector, there are a number of companies listed on a stock exchange. So-called listed private equity (LPE) enjoys a set of advantages. The most obvious is the ongoing market valuation, available from public stock exchange quotes. The listing considerably reduces the illiquidity that is distinctive for private equity investments. Since there are strict requirements that a fund has to fulfill when listed on a stock exchange, the transparency of LPE is significantly higher compared to traditional private equity funds. Most of the LPE vehicles are obliged to disclose according to a generally accepted reporting standard, typically International Financial Reporting Standards or U.S. Generally Accepted Accounting Principles. Transparency is an important feature not just for investors. Researchers benefit from the fact that public companies need to report to the public rather than to their investors exclusively, as is typically the case for traditional private equity funds. Furthermore reporting is not voluntary. This is an important trait needed to avoid a selection and/or sample bias, which are distinctive for setting up research databases in the field of private equity. Cochrane

(2005) notes that overcoming selection bias is the central hurdle in researching private equity investments.

Besides superior liquidity and enhanced transparency, the key advantage of listed private equity companies is that their portfolio is marked-to-market each day. Hence in addition to the funds' NAV estimate, a market opinion on the portfolio value is available on a daily basis, and as a result a daily price can be observed.

Certainly the listed sector of private equity is much smaller than the unlisted sector, accounting for some 10 percent of total private equity market capitalization. Not surprisingly the existence of listed private equity is often overlooked, although it carries various benefits. However, recently the listed sector has been gaining on traditional private equity, not only in terms of market capitalization, but also in the investor's awareness. With big names such as KKR and Blackstone entering the listed private equity market, listed private equity is less and less an exotic sector.

Listed Private Equity

As mentioned, listed private equity refers to publicly traded companies whose shares are quoted on a stock exchange. Publicly traded or listed private equity may seem a contradiction in terms at first glance, so it is worth examining how listed private equity is organized. We provide insight into the differences but also the similarities between both forms of private equity and shed light on the question of whether listed private equity is a valid proxy for the whole private equity asset class.

Differences

Traditional private equity funds are structured as limited partnerships almost without exception. Figure 21.1A depicts the organizational structure of these partnerships. For listed private equity companies, the picture is much more heterogeneous, as these vehicles may take the form of corporations, closed-end investment trusts, publicly traded partnerships, unit trusts, or other structures. As a matter of course, all of these vehicles are quoted on a stock exchange. The marketability and, with it, the availability of market prices are certainly key advantages of listed private equity.

All an investor needs to do is simply buy a share of a listed private equity vehicle on the respective stock exchange. As trading activity occurs (more or less) frequently, a (continuous) market opinion on the value of the underlying private equity portfolio is available. Instead of committing capital to a newly established limited partnership and waiting for the fund to be drawn down and invested, the investor buys into an already invested portfolio, diversified over vintages, styles,

and geographic allocation, depending on the selected vehicle. In this sense the so-called cash drag is reduced in listed vehicles.

As it is far easier to trade a share in a listed private equity vehicle than it is to trade a limited partnership interest, listed private equity provides superior liquidity to an asset class that is typically illiquid due to both the way it is structured and the fact that there is no organized market for trading limited partnerships. On the other hand, limited partnerships can also be traded through secondary private equity transactions. Nevertheless the transaction cost and search cost to find a trading partner are significantly higher than for listed private equity, and it takes significantly longer. However, in terms of risk and return, a change in ownership clearly does not affect the development of the underlying private equity portfolio.

While the limited partnership structure has a fixed life of typically ten years, mostly with the option to extend the life span of the fund for another fixed number of one-year periods, listed private equity vehicles operate as "evergreen," with an eternal life. At the end of a traditional fund's life, all fund capital is to be returned to the investor. In contrast, for listed private equity vehicles, revenues generated from successful exits are reinvested in new projects. This so-called capital recycling is typical for listed vehicles, but apart from minor exceptions, is not the case for traditional private equity funds, which distribute capital gains back to the investor. Reasonable fees, compared to many traditional private equity funds, may be another advantage in listed private equity.

Similarities

In general, private equity is a model of ownership for investors (Strömberg 2009). The unique risk-and-return characteristics of private equity are attributed to a variety of different factors. The dedicated investment strategy, the way private equity funds make their decision and manage their portfolios, and the incentive structure that follows from private equity contracts are probably the most important ones. All of these are true for both traditional and listed private equity vehicles.

Private equity companies, listed or not, invest equity or equity-related capital in private businesses that are not traded on an exchange or make investments in public companies, usually with the aim of delisting. Investments are long term but have a clear exit strategy. The ambition in both forms of private equity is to invest in promising companies and actively help them to develop, restructure, and grow profitably with the aim of selling or floating these investments, typically after holding them five to seven years to realize the capital gains. It is a key characteristic in both forms that private equity managers provide their portfolio companies with management support and contribute their skills, experience, and network in addition to the capital they invest. This usually involves taking a seat on the board and offering a range of assistance, including strategy advice, particularly on capital markets and financing, market analysis, networking, and sourcing additional management.

All of the major investment styles—buyout, venture, and growth capital—known from traditional private equity funds can also be found in the listed private equity market. There is no fundamental difference between traditional and listed private equity in the way these investment styles are implemented:

- *Buyout* typically refers to a strategy of making equity investments as part of a transaction in which a company, business unit, or business assets are acquired from the current shareholders, typically with the use of financial leverage. The companies involved in these transactions are typically mature and generate operating cash flows. A prominent example is HgCapital Trust PLC in the United Kingdom, listed on the London Stock Exchange (LSE), which specializes in middle-market buyouts.
- *Venture capital* refers to investments made in immature companies, typically start-ups, for the launch, early development, or expansion of a business. For example, HBM BioVentures AG, listed on the Swiss Stock Exchange, is a major venture capital provider on a global scale.
- *Growth capital* refers to minority investments in mature companies. It is a type of investment suited to a diverse range of growth opportunities, including acquisitions, increasing production capacity, market or product development, turnaround opportunities, shareholder succession, and change of ownership situations. Growth capital is much more common in listed private equity, as exits from a growth capital position that do not involve a majority holding can be less predictable. Organized as an evergreen structure, listed private equity companies are not obliged to distribute the money back to the limited partners after a specified period of time, so they can be more flexible in setting a variable and therefore suitable investment horizon. This major advantage of listed private equity as permanent capital is evident in the largest listed private equity company in Europe, the LSE-listed 3i Group PLC, which has one of the largest growth capital portfolios in the world.

To finance their deals, listed private equity companies provide the same kind of capital structured in the same way as traditional private equity funds. Through the efficient provision of equity, mezzanine capital, or debt, both forms of private equity strive for the optimal financing of their portfolio companies and try to establish an ideal incentivizing scheme that encourages the growth perspective of their investments. Here listed private equity companies face challenges equivalent to their unlisted counterparts' and respond in the same way. Information asymmetries between the portfolio companies' management and the private equity manager, for instance, give rise to "moral hazard." The use of convertibles and preferred stock reduces the funds' investment risk and provides a strong performance incentive to the portfolio companies' management. Exercising the numerous controlling and voting rights inherent in private equity transactions is a powerful tool for private equity funds. Subsequent financing is mostly linked to predefined performance objectives, and deal negotiations often include further arrangements, such

as "equity earn-outs," that allow management to increase its ownership stake if certain milestones are met or by similar mechanisms.

Today the universe of listed private equity vehicles can be basically classified in the following three categories. Organizational forms of the listed private equity market are depicted in Figure 21.1. For a more detailed discussion of the organizational forms of listed private equity, see Bergmann et al. (2010).

Listed Indirect Private Equity Investment Companies

Figure 21.1B shows the structure of listed indirect private equity investment companies (funds of funds). A listed private equity fund of funds commits capital to traditional private equity limited partnerships. The term "indirect" indicates that the company invests capital in private equity deals not directly but "indirectly," via investments in limited partnerships. In this sense, this category could be described as "actively managed traditional private equity." A prominent company among these is the U.K.-based Pantheon International Participations PLC, which has been listed on the LSE since 1987. Fund of funds are also known in traditional private equity.

A fully invested listed fund of funds bears the advantage over an unlisted fund of providing a diversified and permanent exposure to private equity. It is

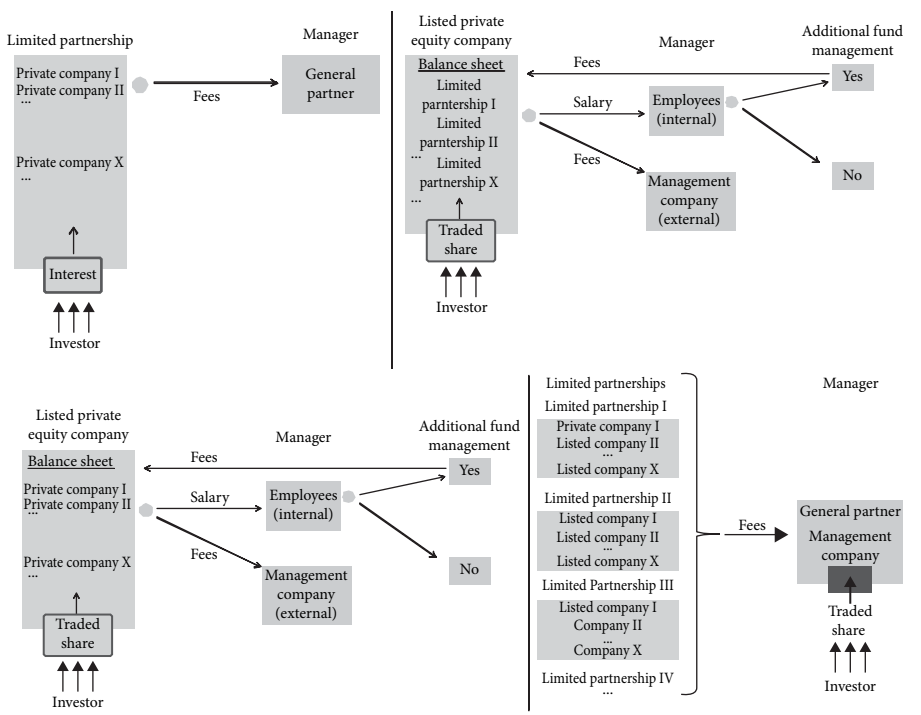

Figure 21.1 The different organizational structures of listed and unlisted private equity.
Source: Bergmann et al. (2010).

permanent in the sense that it has no finite life, but rather reinvests proceeds from older vintage funds in new funds. Their balance sheet consists to a large extent of a portfolio of limited partnerships. A fund of funds may be managed internally, meaning that the managers are employees of the fund, or, more typically within this classification, may be run by an external management company. Funds of funds, in particular those that rely on external management, bear the disadvantage that they are required to pay management fees, so there is a "double fee structure": paying the salary or fees of the listed private equity company or the employed manager and also the fees charged by the general partners of the limited partnerships. However, this is not unique to listed private equity, and to be successful long term, a fund of funds must show that its expertise in manager selection and access justifies its fee.

Listed Direct Private Capital Companies

Listed direct private capital companies account for the majority of listed private equity companies worldwide. A prominent example within this group is the U.K.-based 3i Group PLC. The term "direct" refers to the fact that the company directly invests in private companies and, as opposed to the smaller group of funds of funds, not via investments in limited partnerships. Figure 21.1C displays the typical organization of this type of listed private equity companies. Their balance sheet mainly consists of the acquired interest in the private portfolio companies. Over half of these vehicles are managed internally, and often they use these resources to also manage external funds. Thus, in contrast to an investment in a traditional limited partnership, through this organizational structure an investor not only gains access to a diversified portfolio of private companies but also participates in general partner revenues that are generated from the additional fund management business.

Listed Private Equity Fund Mangers

This category represents a minority of the listed private equity universe. Their organizational structure is depicted in Figure 21.1D. Typically listed fund managers have no direct or indirect exposure to private companies, but rather generate fees from managing limited partnerships. A prominent example is the Blackstone Group LP, listed on the New York Stock exchange.

In summary, there are no significant differences in the way traditional and listed private equity companies invest and operate. The main differences are to be seen in how these vehicles organize themselves. Thus the similarities between traditional and listed private equity are closer than most academics and investors realize. It might also be worth noting in this context that the world's first private

equity fund, American Research and Development, was organized as a publicly traded closed-end investment company.

Many of the listed private equity companies are managed by traditional private equity managers. Often exactly the same deals undertaken in a listed fund are co-invested from a limited partnership, and vice versa. Seen from the listed private equity fund's perspective, in the course of a new deal, a part of the transaction volume is financed by the available resources from the balance sheet, the remainder coming from the managed limited partnerships.

Investment Activities in Listed Private Equity

From the considerations in the previous section, it is easy to see why listed private equity enjoys a growing popularity among both retail and institutional investors. Whether or not the fund is listed, an investor gets access to an actively managed portfolio of unquoted companies, that is, to an enlarged investment universe. It seems appropriate to assume that risk, return, and correlation characteristics from both investment opportunities do not substantially differ. Empirical evidence on this supposition is provided below. Listed private equity, however, provides retail investors an investment opportunity to gain access to the type of returns that generally are available to large institutions or high-net-worth individuals only, due to sizable minimum investments that are required to participate in a limited partnership.

Institutions benefit from the fact that listed private equity offers a considerable degree of flexibility, allowing for an easy and continuous rebalancing of portfolios, as desired. While some see listed private equity as an alternative way to gain exposure to the asset class, other institutional investors use the listed form as a complement to their traditional private equity investment strategy. Investing in limited partnerships has the drawback that it may take many years to achieve the targeted exposure to the asset class. Through the investment in both listed and unlisted private equity, the allocation to the asset class can be kept at the desired level. Immediate exposure to private equity may be reached by investing in listed private equity, and, as the traditional funds draw down committed capital, the position in listed funds can be reduced to serve the capital calls. Distributions received from the traditional funds, on the other hand, may be reinvested into listed private equity in order to avoid the typical dilution of the returns.

Furthermore listed private equity may be a promising solution for smaller and/or younger institutions. Selecting the right (unlisted) private equity fund can be very time-consuming, and negotiating limited partnership contracts requires

a substantial amount of experience and dedicated skills. Although this work is costly, it is crucial to increase the probability of generating superior returns. Listed private equity incurs lower transaction and search costs compared to traditional private equity, which makes it an interesting alternative for institutions that are not willing or able to devote a considerable amount of resources to a specialized private equity investment team. A well-established network and a recognized track record as an investor are key to getting access to the best private equity funds. It is common in private equity that fund managers, particularly the best performing managers, restrict participation in a follow-on fund to existing LPs, not accepting new investors. This restriction cannot be implemented for listed private equity vehicles, but may be particularly important to consider in the context of well-recognized performance persistence among private equity managers. Lerner et al. (2007) document that there are systematic differences in institutional investors' ability to pick successful private equity funds. Long-standing relationships with reputable private equity managers significantly increase the chance of investing in a high-performing fund.

Listed private equity is perceived by investors as very suitable for those who do not invest in traditional private equity funds, according to a recent survey conducted by LPEQ (2008), a group of European quoted private equity companies that aims to raise awareness and understanding of the listed private equity asset class, and Preqin, a provider of data and analysis for the alternative assets industry. The sample covers one hundred institutional investors chosen to represent a range of countries, sizes of institutions, and types of institutions and reflects both companies that invest in listed private equity and others that currently do not. Interestingly almost three-quarters of the respondents who do not invest in listed private equity declare that their mandate does not permit them to invest, while half of those who are permitted in fact are invested in this form of private equity at the time of the survey. Beyond liquidity, immediate access to private equity, avoiding the J-curve,[1] and administrative simplicity are viewed as key advantages of listed private equity.

Based on this data, Cumming et al. (2010) find that institutional allocations to listed private equity depend on size, type, location, decision-making authority, and liquidity preferences. In particular, institutional investment in listed private equity is biased toward institutions that are smaller, private (not public) pension institutions, institutions that have a preference for liquidity, and institutions that are based in the United Kingdom. The authors argue that search costs are a function of location. The United Kingdom in fact has the most developed listed private equity market. Around one-third of all listed private equity vehicles worldwide are listed on the London Stock Exchange. Furthermore the majority of analysts covering listed private equity are based in London. Cumming et al. further observe that institutions are more likely to invest in listed private equity when the investment decision is not being taken by a private equity team, an alternative asset class team, or a board or investment committee, but rather when decision making is delegated to a general equities team.

In a follow-up survey LPEQ (2010) and Scorpio Partnership have addressed family offices and find that apart from liquidity, lower entry thresholds and thus enhanced diversification potential are seen as the most important benefits of listed private equity. Administrative advantages are also considered central. Family offices typically do not regard listed private equity as a tactical instrument, but rather as a convenient approach to access a complex asset class, and they value the fact that listed private equity provides a simple and cost-effective way to gain exposure to a wide range of underlying private equity investments.

The growing interest in listed private equity is by GPs as well as LPs. Traditional private equity companies have found listed private equity to be an additional market that targets a potentially different type of investor; they see this as a rapidly growing pool of new capital.

Comparison of Traditional and Listed Private Equity: Empirical Evidence

The discussion in the previous sections suggests that from a conceptual point of view, significant differences in the risk-and-return menu of traditional and listed private equity should not be expected. We now investigate this presumption with empirical data. The analysis is based on the public market equivalent (PME) approach that was first introduced by Long and Nickles (1995) and has been used to benchmark the performance of private equity in a variety of academic studies. The most prominent among those is the work of Kaplan and Schoar (2005), who benchmark the performance of 746 traditional private equity funds against the S&P 500.

Following Kaplan and Schoar's (2005) definition, the PME is calculated as the sum of all discounted cash outflows (or distributions) over the sum of the discounted inflows (or capital calls), where the total return of the index to which the investment is compared is used as the discount rate. The PME assumes that intermediate cash flows are reinvested in the public benchmark.

Intuitively the PME approach can be seen as buying "shares" of a public market index when capital is called by a private equity fund, and selling "shares" when distributions are made. The value of the actual number of shares bought (sold) equals the cash flow to (from) the private investment at the time it occurs. So the cash flow pattern of a private fund is perfectly replicated by investing in and disinvesting from the benchmark, consistently taking the de facto timing into account.

The PME shows, in terms of present value, the amount of money that is necessary to invest in the public benchmark for every dollar invested in the private equity fund in order to yield equivalent cash flows as they are generated by the fund. Thus

the PME is a sensible and useful measure as it reflects the return to unlisted private equity funds relative to a public market alternative. If the PME exceeds 1, the private equity investment outperformed the public market. Analogously a PME less than 1 reveals underperformance. Investigating under- and outperformance is the typical use of the PME measure.

In our context we compute PMEs of unlisted private equity investments with respect to a public market benchmark reflecting the listed private equity universe. If the PME across funds on average equals unity, the returns on the publicly traded benchmark necessarily need to exactly match those earned on traditional, unquoted private equity funds after controlling for the timing of in- and outflows. If this pattern is stable over time (or vintages), it would then be appropriate to conclude that the return behavior of both forms of private equity is equal. In other words, the benchmark made up of publicly traded private equity vehicles could be regarded as a valid proxy for the return behavior of traditional private equity investments. A few methodological issues are addressed before the empirical results are discussed.

Methodological Issues

The cash flow data used for this analysis have been collected from two sources. First, the starting place of information is a unique and still widely unexplored database that has been compiled by Preqin. The information contained in their records includes not only data on the funds' returns but also data concerning the history of cash flows for a substantial number of funds. Due to gathering information not only from GPs, but also from LPs, the database is likely to be free from any selection bias. Specifically it is unlikely that only data of high-performing funds are assimilated. The empirical results support this claim. Moreover since Preqin primarily receives information from the very beginning of a fund's life, there is little opportunity for the data being biased toward survivorship. The data set contains data on 1,515 funds and covers a total of 48,289 single cash flows.

Second, these data are supplemented with information provided by a large Swiss institutional investor who has been engaged in private equity investments for many years. This institution has granted us exclusive access to the full cash flow history from their private equity investment scheme for the purpose of this study. This provides an additional 109 funds with another 6,895 cash flows.

The LPX50 TR index serves as the public market benchmark. The index comprises the fifty largest listed private equity vehicles and is well diversified over investment styles and geographic allocation. The index can be regarded as an appropriate representation of the listed private equity universe. As the industry standard for index calculation, constituents are required to pass a liquidity analysis and are weighted according to their relative market capitalization. Dividends are reinvested in the distributing company in order to create a (total return) performance index. The index is calculated and published on a daily basis by LPX GmbH, a

Swiss-based research house dedicated to alternative investments. Though a young company founded in 2004, the team has a ten-year history of research in the listed private equity area. LPX's listed private equity index family was the first set of benchmarks for private equity based solely on objective market valuations. Today these indices are widely accepted as a reliable tool for valuation and representative performance benchmarks for private equity in both the academic community and among industry experts. In contrast to traditional private equity indices, listed private equity indices benefit from the advantage that they can be replicated in an investor's portfolio; this feature establishes them as true investable benchmarks.

The complete data set contains the cash flow history to date of traditional private equity funds with vintage years from 1984 to 2008. However, as this analysis aims at focusing on (realized) cash flows rather than on subjective valuations, only funds that have realized the majority of their investments are taken into account. Clearly there is a trade-off between this requirement and sample size, especially for funds raised in more recent vintage years. To reflect this, a remaining (unrealized) NAV of 30 percent of cumulative draw-downs serves as the cut-off point. Funds that report an NAV exceeding this value are dropped from the analysis. Furthermore, as the LPX50 TR index's time series goes back to 1986, funds with earlier vintages need to be excluded. Applying these two restrictions leaves a sample that spans the vintage years 1986–2003, covering 416 individual private equity funds and a total of 26,464 cash flows. Note that the relative performance evaluation goes beyond the year 2003, as the observation period for cash flows and hence benchmarking the private equity investments does not terminate until each of the funds is fully liquidated. Some of the funds in the sample are still active and report ongoing cash flows and valuations.

The majority of funds in the sample were started in the mid-1990s, while the sample contains relatively fewer funds with earlier vintage years. This reflects the rapid growth of the private equity industry during this time. Moreover funds with vintage years 2000 and later are relatively underrepresented, as most of these funds are not yet mature enough to be included in the analysis. The relative fraction of investment styles is fairly equal during the sample period, though the proportion varies over time. In total, buyout funds account for 39 percent of the sample, followed by venture (31 percent) and other funds (30 percent). Others include growth capital, distressed, funds of funds, theme funds like natural resources, and secondary funds. The sample breakdown is shown in Table 21.2.

Empirical Results

For each of these funds, the PME is calculated according to the methodology described above. The empirical results are displayed in Tables 21.3 and 21.4 and can be summarized as follows: The mean PME over the full sample period is 1.02, with a corresponding median PME of 0.99. Both values are close to unity, indicating almost no performance difference between listed and unlisted private equity on

Table 21.2 Number of Funds in the Sample

Vintages	Number of Funds	Venture	Buyout	Other
1986–1989	17	7 (41%)	7 (41%)	3 (18%)
1990–1991	15	7 (47%)	6 (40%)	2 (13%)
1992–1993	31	9 (29%)	14 (45%)	8 (26%)
1994–1995	72	21 (29%)	30 (42%)	21 (29%)
1996–1997	100	30 (30%)	42 (42%)	28 (28%)
1998–1999	110	39 (35%)	36 (33%)	35 (32%)
2000–2003	71	18 (25%)	26 (37%)	27 (38%)
Full Period	416	131 (31%)	161 (39%)	124 (30%)

Notes: This table presents the number of funds (absolute and in percentage of investment styles) for the sample under consideration. The category Other includes growth capital, distressed, funds of funds, theme funds like natural resources, and real estate, and secondary funds.

average during the full sample period. However, the cross-sectional standard deviation is high, at 0.57, which does not surprise, given the large heterogeneity in private equity returns. Funds in this sample returned IRRs from –54 percent for the worst performing fund to an IRR of almost 560 percent for the best performing fund.

A breakdown of vintage years provides further in-depth insight on the relative return behavior of listed and unlisted private equity over time. PMEs are pooled in intervals of two years, to derive groups of at least fifteen funds for each period. When combining the PMEs across vintages, there is a clear trade-off between not losing too much information from aggregating the results on the one hand, and the results being exposed to particular outliers on the other hand. Groups of two years are a reasonable compromise. However, as the sample does not contain enough individual funds for the very early and the most recent vintage years, it is necessary to summarize the

Table 21.3 Cross-sectional PME Distribution for the Three Indices Used as Public Market Benchmarks

	LPX50	MSCI World	NASDAQ
First Quartile	0.6498	0.7390	0.7304
Median	0.9904	1.1008	1.1242
Mean	1.0216	1.1590	1.1703
Third Quartile	1.2870	1.4150	1.4810
Standard Deviation	0.5699	0.6758	0.6296

Notes: The PME is calculated as the sum of the discounted distributions over the sum of the discounted capital calls of a private equity fund. The cumulative total returns of the public market indices indicated in the headline of the table are used as the discount rate.

Table 21.4 Mean and Median PME for Each Group of Vintage Years

Vintages	LPX50		MSCI World		NASDAQ	
	PME Mean	PME Median	PME Mean	PME Median	PME Mean	PME Median
1986–1989	0.99	0.91	1.29	1.19	1.01	0.99
1990–1991	1.02	1.05	1.22	1.20	0.94	0.96
1992–1993	1.05	0.92	1.23	1.09	1.02	0.92
1994–1995	1.13	1.03	1.29	1.14	1.12	1.07
1996–1997	1.06	0.96	1.25	1.06	1.23	1.11
1998–1999	0.95	0.97	1.03	1.04	1.25	1.24
2000–2003	0.96	1.03	1.03	1.15	1.16	1.24
Full Period	1.02	0.99	1.16	1.10	1.17	1.12

vintages 1986–1989 and 2000–2003 in groups of four years each. Figure 21.2 shows the individual PMEs' seven clusters of vintage years in the sample.

The PMEs are relatively stable over time and, with an exception for the 1994–1995 vintages, are well around unity.[2] An important observation from this analysis is that PMEs are stable, but this is not true of the respective underlying returns. This observation reveals important insight into the fluctuation of returns over time—and hence their risk characteristics. Recall that the PME measures relative returns. In other words, while the returns vary substantially over time, relative returns remain stable. Apparently returns in listed and unlisted private equity funds need to fluctuate in the same order of magnitude in order to imply stable PMEs! This insight suggests that the returns of both listed and unlisted private equity funds are likely to be driven by the same risk factors.

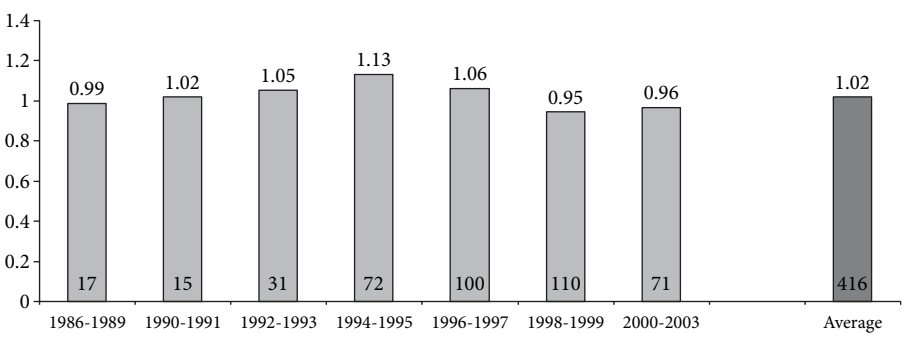

Figure 21.2 PMEs for the distinctive vintage years over the sample period. Vintage years are grouped such that each cluster contains data on at least fifteen individual private equity funds. The PME is calculated as the sum of all discounted cash outflows over the sum of the discounted inflows, where the total return of the index to which the investment is compared is used as the discount rate. The figure at the bottom of each bar represents the number of funds in the respective period. Figures at the top of each bar relate to the PME measure.

A completely different picture emerges if public market benchmarks other than listed private equity indices are used for computing PMEs. Using the returns on the MSCI World TR, a broad global equity index, leads to an average PME of 1.16 and a median PME of 1.10. The cross-sectional standard deviation rises to 0.68. An average PME of 1.16 would translate into an average cumulative alpha of 16 percent over the life span of a fund, assuming the systematic risk for private equity would be comparable to the global equity risk. However, this assumption is rather questionable. The distribution of PMEs over time varies significantly, showing that private equity funds, particularly those with earlier vintage years, behave significantly differently from global equities. Following Cochrane's (2005) considerations, one could argue that a substantial part of private equity funds invests in small companies, and thus benchmarking the returns of private equity against a broad global equity index such as the MSCI World is not appropriate. In this case it would be more appropriate to use the returns on the NASDAQ Composite TR index, as this index also comprises small to tiny, often start-up companies. The empirical results do not show a better fit between the returns on private equity funds and the NASDAQ index. The average PME is 1.17, with a corresponding median PME of 1.12 and a cross-sectional standard deviation of 0.63. Looking at the distribution of PMEs over time reveals a picture almost opposite to the results for the MSCI World. While the returns on the NASDAQ index in the earlier vintage years are apparently similar to the returns earned on private equity investments, they fail to match the returns in more recent vintage years. The reverse is true for the returns on the MSCI World.

These observations suggest that private equity indeed has its own risk-and-return pattern. This pattern is markedly different from the one shown by other traded equities. However, a listed private equity index seems to closely resemble this pattern, indicating almost no difference in the performance of one form of private equity over the other. Moreover this pattern is stable over time, suggesting that the fluctuation in returns and hence risk is very similar in both forms of private equity. From this background it seems appropriate to conclude that listed and unlisted private equity have common risk and return characteristics.

Risk, Returns, and Correlation of Private Equity

This section provides insight into the risk, return, and correlation characteristics of private equity from the listed viewpoint.

Figure 21.3A displays the performance of the LPX50 TR index, the MSCI World index, and the NASDAQ Composite index. The chart discriminates between four

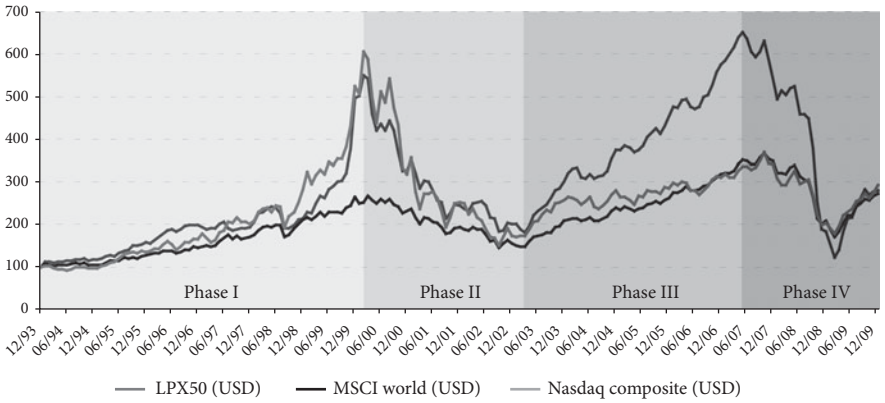

Figure 21.3A The performance of the LPX50 TR in comparison with the MSCI World and Nasdaq Composite. All indices are shown in USD.

cycles, where the first phase refers to the years until the high-tech boom, the second covers the time from the burst of the dot-com bubble, the third phase refers to the buyout boom, and the fourth phase describes the time from the beginning of the financial crisis until the end of 2009. The picture reveals that private equity behaves differently than public equity; however, they are naturally correlated. Figure 21.3B corresponds to the comparison between (listed) private equity and traditional equities, but also indicates the contribution of the two major investment styles, buyout and venture, which are proxied by the LPX Buyout TR and the LPX Venture TR index.

While in the years 1994 to 2003 venture capital returns account for a significant fraction of the overall private equity returns, the picture reverses in later years. Table 21.5 provides the risk and return characteristics over the four market cycles for the private equity industry as a whole, and for venture capital and buyout funds separately. Private equity has experienced geometric annualized returns in excess of 30 percent in the bull markets of 1994–2000 and 2003–2007, and negative returns

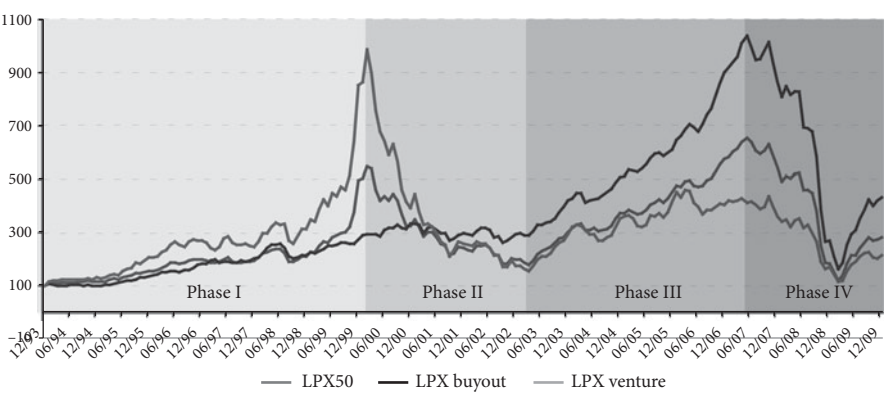

Figure 21.3B The performance of the LPX50 TR in comparison with the LPX Buyout TR and LPX Venture TR. All indices are shown in USD.

Table 21.5 Return, Risk, and Correlation

	LPX50			LPX Buyout			LPX Venture		
	Return	Risk	Correlation	Return	Risk	Correlation	Return	Risk	Correlation
Phase 1									
January 1994–February 2000 Index launch until high-tech boom	31.81%	18.47%	0.60	19.13%	12.84%	0.53	44.97%	24.88%	0.59
Phase 2									
March 2000–March 2003 Dot-com bubble	–30.29%	25.27%	0.78	–0.61%	15.52%	0.70	–45.01%	32.51%	0.69
Phase 3									
April 2003–June 2007 Buyout boom	34.50%	12.20%	0.83	33.72%	9.99%	0.75	26.13%	19.12%	0.74
Phase 4									
July 2007–December 2009 Financial crisis	–27.88%	46.34%	0.93	–28.33%	51.67%	0.91	–23.18%	40.14%	0.90

Notes: This table presents the return, risk, and correlation for the private equity industry as a whole and the two major investment styles, buyout and venture capital, in the different phases, as shown in Figure 21.3. Return is calculated as the annualized geometric mean return; risk refers to the volatility based on monthly log returns; correlation is calculated against the MSCI World Index. All figures are denominated in USD.

around 30 percent in the bear markets of 2000–2003 and after 2007. Venture capital returns are typically more volatile than buyout returns if one excludes the years of the financial crisis. It is interesting to see how correlations have risen over time from 0.6 to roughly 0.9 today, a result that has also been documented in traditional asset classes (see Oertmann and Zimmermann 1998).

Private Equity and Asset Allocation

The risk, return, and correlation characteristics of an asset class are the key ingredients for asset allocation decisions. This section addresses the question of how listed private equity affects the diversification of an international bond and equity portfolio from the perspective of a U.S.-currency-based investor. We specify four broad asset classes apart from private equity: European bonds, European equity, U.S. bonds, and U.S. equity. The respective benchmarks used in the empirical study are the Bloomberg European Government Bonds Index (10y+), the MSCI Europe Total Return Index, the Bloomberg U.S. Government Bonds Index (10y+), and the S&P 500 Total Return Index. The private equity class is proxied by the LPX50 TR index.

Selecting an adequate and representative time period for the empirical estimates is critical, because the results substantially depend on the measurement interval used. As known from several studies, the time variation and estimation error of expected returns affects portfolio allocations much more than time variation and estimation risk in the variance-covariance matrix. Also univariate historical average returns are typically poor estimates of expected returns. We proceed therefore as follows: Expected returns are estimated as a weighted average between historical returns and CAPM-based expected returns; this "shrinkage" estimate is widely used in practice and is empirically justified. We use a weighting (shrinkage) factor of 0.8, giving more weight (confidence) to the model estimate. Average returns, volatilities, betas, and correlations are estimated with simple monthly returns from January 1999 to December 2006. The time period covers an entire stock market cycle, starting with an upturn in the late 1990s, the dot-com crisis in the early 2000s, and the subsequent recovery until 2006.

Table 21.6 displays the estimates from this time period. Apparently, although internationally diversified, listed private equity exhibits a much larger volatility (standard deviation of returns) than the U.S. and European stock market segments; the beta coefficient with respect to the global stock market index is 1.3, indicating a strong procyclical asset class.

Based on these figures, we use the shrunk expected returns shown in Table 21.7; for the CAPM we assume an expected market rate of return of the world index of 6 percent (the empirical estimate is 6.2 percent); the average monthly risk-free rate of returns, based on Eurocurrency deposits, is 3.5 percent over the time period.

Table 21.6 Historical Average Return, Volatility, Beta, and Correlation Estimates, January 1999 to December 2006

	Bond Europe	Bond U.S.	Equity U.S.	Equity Europe	Private Equity	MSCI World
Annualized Arithmetic Mean Return	0.0940	0.0664	0.0447	0.0817	0.1630	0.0620
Annualized Standard Deviation	0.1268	0.0930	0.1422	0.1570	0.2365	0.1380
Beta (against MSCI World)	−0.0030	−0.1536	0.9794	1.0332	1.3204	n/a
Correlations						
Bond Europe	1.00					
Bond U.S.	0.62	1.00				
Equity U.S.	−0.11	−0.24	1.00			
Equity Europe	0.16	−0.20	0.81	1.00		
Private Equity	0.01	−0.14	0.68	0.72	1.00	
MSCI World	0.00	−0.23	0.96	0.92	0.78	1.00

Note: Calculations are based on the simple returns from the time period January 1999 to December 2006.

Table 21.7 Shrinkage Estimates of Expected Returns and Portfolio Weights

		Bond Europe	Bond U.S.	Equity U.S.	Equity Europe	Private Equity
Annualized Arithmetic Mean Return		0.0940	0.0664	0.0447	0.0817	0.1630
Expected Return CAPM		0.035	0.03125	0.06	0.06	0.0675
Assumed Beta		0	−0.15	1	1	1.3
Shrunk Expected Return		0.0468	0.0383	0.0569	0.0643	0.0866
Tangency Portfolio						
	Sharpe Ratio	**Weights**				
w/o Private Equity	0.20	15.91%	24.51%	16.03%	43.55%	
with Private Equity	0.24	26.16%	17.22%	2.20%	14.42%	40.00%

Notes: The first part of this table presents the historical average return (recapitalized from Table 21.5), the CAPM expected return, and the resulting shrunk expected return (weighting factor 0.8 for the model estimate) for the asset classes under consideration. The second part of this table displays the Sharpe ratio and the respective weights of the tangency portfolio with and without the inclusion of (listed) private equity. Calculations are based on simple returns from January 1999 to December 2006.

The maximum Sharpe ratio (i.e., tangency) portfolios based on these estimates are displayed in the second part of Table 21.7. Without private equity, the portfolio is allocated approximately 60 percent to stocks (16 percent in the United States, 44 percent in Europe) and exhibits a domestic share of 40 percent (24 percent in bonds and 16 percent in stocks). Including listed private equity as an additional asset class, the equity portion decreases to approximately 56 percent, with an allocation of 40 percent to listed private equity, which is a substantial share; it further implies that listed private equity substitutes U.S. as well as non-U.S. equity in the portfolio. It also reallocates bond positions from U.S. bonds to euro-denominated government bonds. Overall the Sharpe ratio of the tangency portfolio improves from 0.20 to 0.24. These are, of course, indicative statistics to be expected for reasonably long holding periods. Further research is needed to address tactical issues related to the time variation of risk and expected return characteristics.

Conclusion

Listed private equity provides an alternative way to approach the private equity asset class. Although this niche in the private equity sector is relatively small, it offers a variety of features that make it attractive for both investors and researchers alike.

Investors benefit from easy access to the asset class, with almost no restriction. There are no minimum investments or other requirements, such as a proven track record as an investor, to participate in a listed fund. The fact that listed private equity can be acquired or sold in an organized market significantly enhances liquidity and lowers transaction costs. This makes listed private equity particularly suitable for institutions that are too small to commit to a selection of traditional funds or do not want to spend a material amount of resources to a specialized private equity investment team. Immediate exposure to an existing portfolio of unquoted companies is another advantage of listed private equity. The ability to rebalance their private equity allocation in a flexible way is desirable for all types of investors.

From a research perspective, enhanced transparency and the availability of daily market prices are the notable advantages of listed private equity. Research in traditional private equity suffers from a lack of reliable and meaningful data. In the absence of market prices, the calculation of even the most basic characteristics such as risk, return, and correlation is anything but straightforward. Nevertheless a deep understanding of all these parameters is crucial for integrating private equity into the framework of modern portfolio theory and well structures investment management processes. As a result of being quoted on a public stock exchange, a listed private equity fund's portfolio is continuously priced in an organized market. The possibility of employing a time series of market returns enables the application of standard tools in financial research. The results so attained can be easily compared to other asset classes.

From a conceptual point of view, the key characteristics that make the risk-and-return menu of private equity unique are shared between listed and unlisted funds. Listed funds operate in the same way as unlisted funds do. They provide the same kind of capital, follow the same investment styles, and manage their portfolios in the same way as unlisted funds do. Besides providing capital, the private equity fund managers offer management support and take an active role in their portfolio companies, where they contribute their skills, network, and experience. The main difference can be seen in the way these vehicles are organized. Listed private equity is not organized as a limited partnership, as most of the traditional funds are. However, this is primarily a legal distinction. The typical characteristics that are attributed to these alternative investments result from how these vehicles invest rather from how they collect their own capital. The fact that a change in ownership of the fund is as readily possible as it is for any other quoted share affects only the relationship between investors. It clearly does not influence the relationship between the GP and the portfolio company and so should not have a significant impact on the portfolio's return. Empirical evidence supports this view.

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Notes

1. The term "J-curve" refers to the fact that private equity funds tend to deliver negative returns in early years, before realizing investment gains as the portfolio companies mature.
2. In general and in accordance with other studies, these vintages were extraordinary years for the private equity industry, with some funds delivering very favorable returns. There are two funds in the sample with PMEs close to 4, which clearly drives the average. Removing those funds would lead to an average PME for the 1994–1995 vintages of around 1.06.

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CHAPTER 22

LISTED PRIVATE EQUITY AND THE CASE OF EXITS

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MANUEL VASCONCELOS

Private equity (PE) as an asset class has long been associated with sophisticated investors such as high-net-worth individuals or institutions. This relation is due to restrictions imposed by PE funds on the level of the investment and liquidity necessary to become a limited partner. However, some private equity companies started listing shares in public markets, allowing any investor to own a part of their business. An example of this process is the public listing of a Kohlberg Kravis Roberts & Company (KKR) fund in 2006, which raised $5 billion.[1] There has been a sound increase in the number of listed private equity firms over the past thirty years (Bilo et al. 2005), and in the past few years other famous names in the industry, such as Blackstone and Apollo Management, have followed this route.

The reasons for this trend are multidimensional. The PE industry can benefit from private investors' appetite for alternative investments and increase the funds under management. Furthermore it is an opportunity for the PE fund to establish a permanent capital basis, which diminishes the pressure to exit investments, alongside the possibility of continuously earning management fees. Finally, the public listing of the equity of a PE house may allow the partners to cash out on their positions.

Publicly listed PE vehicles (LPEs) are one of three types of organizational forms: listed companies whose core business is private equity, quoted investment funds conducting equity investments in private firms, and structured investment

vehicles making direct and indirect investments in private companies (Bilo et al. 2005). Behind each classification method there are two, more general legal forms: listed private equity houses and quoted funds.[2] The main differences are that a LPE house may manage more than one fund and that a LPE fund has to report its net asset value.

The ownership structure in LPEs, with the resulting disclosure of data, allows for a broader empirical assessment than what is possible with nonlisted PE. Further investigation can be dedicated to the various stages of private equity investments (fundraising, investing, value adding, and divesting). While all these stages can have substantial influences on the PE returns, the realization of the investment by means of an exit is of particular importance because this phase shapes all previous stages (Gompers and Lerner 2001), and it can also be seen as a corporate governance mechanism (Black and Gilson 1998). Contemporary research results also suggest that private equity firms have superior ability to identify undervalued targets (Bargeron et al. 2008), but potentially have inferior skill in divesting investments (Smith and Wall 1997). The creation of value by private equity involvement is highly dependent on the success of the exit route chosen. Several studies have focused on the factors that influence the choice of the exit strategy (e.g., Schmidt and Steffen 2008; Brau et al. 2003; Schwienbacher 2002). Although these papers have contributed to our understanding of the mechanics behind a divestment process, there is not yet conclusive evidence pertaining to the wealth effects of the different exit routes. This study aims to fill this gap in the literature by linking the exit announcements to the market valuation of PE firms. To that purpose we take advantage of the increased availability of data arising from the PE listed status.

The literature on LPEs is very limited. Bilo et al. (2005) and Lahr and Herschke (2009) study the risk and return characteristics of LPE companies. Bilo et al. calculate an average capital asset pricing model beta of 1.2 and a corresponding alpha of –1.2 percent per year for their sample of 283 LPE companies. Lahr and Herschke find an average Dimson beta of 1.7 and no significant alpha,[3] but they also report a large variation depending on the LPEs' organizational form. Although LPEs have a structure that might look similar to nonlisted PEs, there are some important differences that make them worth studying. The listed entity has an undefined life span, in contrast to most nonlisted funds, which last for only ten years. Also LPEs cannot be as easily liquidated as other private equity funds. As a result some of the governance mechanisms to reduce agency costs that are necessary in the private equity context are nonexistent (Sahlman 1990; Jensen 2007). On top of this, when structured as a fund, LPEs have to report the net asset value (NAV) of their holdings. It is a well-known phenomenon in finance that closed-end funds trade at a discount to their NAV, despite usually being invested in market-traded securities for which there is a readily available price (Lee et al. 1991). In the case of LPEs, this concern can be of great importance, as there is no market price observable for their holdings. Hence it comes as no surprise that some of these funds trade at a high discount to their NAV.[4] Kaserer and Lahr (2009) report that listed private equity funds trade at a discount up to 21 percent in relation to their net asset value.

Although LPE houses, unlike funds, do not have to report NAV, they suffer from the same information asymmetry problems associated with dispersed ownership and with the need to reliably communicate the value of their holdings.[5]

We hypothesize that one of the ways to overcome the information asymmetry between LPE managers and investors is through the sale of a portfolio company (Black and Gilson 1998). The amount of cash received by the LPE should be equivalent to the market value of the firm, so its investors can immediately analyze whether it meets their expectations. In addition the exit can be a signal of the quality of the GP; as stated by Black and Gilson, "exit prices give capital providers a reliable measure of the venture capital manager's skill" (246), facilitating the financial contracting between the two. We are also able to test whether the pecking order usually reported for exiting investments (Bienz and Leite 2008), with IPOs preferred over trade sales, which in turn are preferred over secondary buyouts, is associated with different market reactions. We compare all these with stock deals, which consist of the LPE selling shares in a publicly traded firm.

We find that the announcement of the sale of a portfolio company by a LPE is associated with a significantly positive market reaction, consistent with our hypothesis that an exit mitigates the information asymmetry problem in these firms and can be used as a signaling device. In the period of seven days around the announcement of an exit, the LPE stock experiences an abnormal return of 0.84 percent on average. We also find that abnormal returns are negatively correlated with the stock or market run-up, deal value, LPE size, and LPE reputation, suggesting that exits are more important when there is higher information asymmetry regarding the valuation of the PE firm.

In support of our hypothesis of a pecking order for the type of exit, we find that IPOs generate the most positive abnormal returns of all exit routes. This is consistent with the view that IPOs are associated with higher returns being earned by the PE firm (Gompers and Lerner 2001) and with our view that they signal managers' ability. We find some degree of evidence for the other predictions of this hypothesis, with trade sales and secondary buyouts performing better than stock deals, but these results are seldom statistically significant.

The chapter proceeds as follows: First we derive our hypotheses and describe our data. Then we report and discuss the results

Hypothesis Development

Jensen and Meckling (1976) suggest that information asymmetry, being the underlying concept of agency theory, causes two dilemmas for the ignorant party. First, information asymmetry potentially motivates managers to not act in the best interest of the financiers, resulting in moral hazard. Second, in adverse selection models

the ignorant party lacks information when negotiating a contract. Linking this theory to private equity, two potential sources for the emergence of asymmetric information can be identified: information asymmetries between corporate portfolio companies and general partners (Kaplan and Stroemberg 2003) and between general partners and investors (Metrick and Yasuda 2010). In PE funds investors can at best estimate the true value of the portfolio companies, since there is no readily available market price for those firms. As a result investors have to rely on the valuation of the PE managers. This can be a special concern in LPEs. Due to LPEs' unlimited life span, managers can, in theory, collect management fees in perpetuity without having to sell any portfolio firms.

Previous studies address information asymmetries connected to divestment processes. Kandel et al. (2006) reason that information asymmetry between general and limited partners will eventually emerge at some stage of the investment, when general partners become aware of the true value of the projects they have invested in. According to the authors, this consciousness will influence the divestment behavior of the general partners, who are inclined to operate myopically. The researchers' model suggests that prospering investments are exited in a premature stage in order to reduce monitoring costs for the further development of the project, while poorly performing investments are continued in the hope of increasing value. Similar findings are reported by Phalippou and Gottschalg (2009), who refer to companies that are still carried in the books, although they are worthless, as "living dead investments." Many authors (e.g., Lerner and Schoar 2004; Gompers and Lerner 2001; Sahlman 1990) argue that this type of agency cost in the private equity environment can be reduced by limiting the life of a fund, establishing covenants in partnership agreements, and the ensuring the ability to force fund liquidation. Considering that LPEs have an eternal life and cannot be easily liquidated, further governance instruments are potentially needed for these investment companies.

Literature on exchange-traded closed-end funds highlights the problem of trading discounts related to the funds' net asset value (e.g., Lee et al. 1991; Zweig 1973; DeLong et al. 1991). This anomaly has been recently investigated in the context of LPEs, and evidence suggests that the discount to net asset value also holds for this asset class (Kaserer and Lahr 2009). Studies related to standard closed-end funds have attempted to research the underlying causes of these discounts, which amount to approximately 10 percent throughout the life span of a closed-end fund (Weiss 1989). Evidence supports the notion that this discount arises from tax liabilities on unrealized gains (Kadapakkam et al. 2008), market segmentation (Bekaert and Urias 1996), agency costs (Gemmill and Thomas 2002), and investors' sentiment (Lee et al. 1991). Researchers have reported that discounts disappear when closed-end funds become open-ended (Brickley and Schallheim 1985; Brauer 1984). The announcement of an opening of standard closed-end funds, which usually invest in market-traded securities, results in a significantly positive share price reaction. Following this observation, we expect a magnified effect for LPEs driven by the information asymmetry between investors and LPE managers under the

principal-agent doctrine (Black and Gilson 1998). Investors do not know if the value reported by managers is true until the sale is made, an aspect that is reflected in the LPE funds trading at a discount. In addition the complete termination of a LPE is not possible at once, because of the illiquidity of the assets. As a result exit announcements can be seen as partly resolving the information asymmetry existent in LPEs, and should thus be associated with a positive stock market reaction.

On a different angle, exits can be seen as a signal sent by the LPE managers to investors. It is assumed that the announcements of exits are expected to signal information about the managers' ability and thus help investors to differentiate among these (Hellmann and Puri 2002; Repullo and Suarez 2004). According to signaling theory, this differentiation arises as only good LPE investments will be exited (Spence 1973). For bad LPE investments, the cost of exiting is regarded as too high, as it entails a loss of reputation. If a manager exits an investment in unfavorable conditions, due to its bad quality, he will reveal his type to the market, thereby affecting his reputation. Reputation is considered important, since it represents a necessary quality of the general partners to tap investors for fresh money. Although LPE companies do not frequently need fresh money from equity investors, we nevertheless assume that bad LPE managers prefer to carry weakly performing assets in the books rather than divesting them and sending a signal of their questionable abilities to the market. It should be noted in this context that there is a second crucial financing source for PE deals, which is the capacity to exploit leverage for new deals, and in the LPE environment reputation is critical to tap debt financing.

We hypothesize that divestment activity has a positive impact on firm value through two distinct, but not mutually exclusive channels. One is associated with the fact that investors do not have a market price for the holdings of the LPE firm. When the portfolio company is sold, the asymmetry in the information held by managers and investors in relation to the firm's value is resolved. The other important feature is the fact that managers can signal their ability by exiting a successful investment. Taking both aspects into account, we derive the following hypothesis:

Hypothesis 1: Divesting a portfolio company will generate a positive market reaction.

The academic literature consistently identifies three exit strategies: IPOs, trade sales, and secondary buyouts (e.g., Nikoskelainen and Wright 2007). IPOs refer to the sale of the portfolio company via floatation of the shares in the public market. A trade sale describes the process of selling a company to a strategic buyer. The sale from one private equity corporation to another is usually called a secondary or tertiary buyout, depending on the number of previous PE owners. For the rest of this study we refer to it as secondary buyout, independently of the number of previous financial owners.

Recent studies have identified some significant factors predicting which of these exit strategies are utilized. IPOs are a financing instrument for large companies able to adapt their organization to the expensive burdens of the floatation (Pagano and Roell 1998; Ritter 1987). In addition a study related to private equity

exits undertaken by Brau et al. (2003) reveals that firm size of private companies is positively correlated to the decision to go public. Cumming and MacIntosh (2003) demonstrate similar patterns in their theory, arguing that the length of the holding period of corporate portfolio companies conveys information about aspects of portfolio quality. They find evidence for the completion of write-offs the shorter the investment holding period. In contrast, Gompers (1996) argues that venture capital firms occasionally flip their investments too early by means of an IPO. In his line of argumentation, this strategy is pursued in order to build a professional reputation by signaling to the capital market the strength of the remaining holdings. Sudarsanam (2005) substantiates that longer holding periods increase the probability of secondary buyouts and trade sales. Reasons for this might be related to the fact that leveraged buyouts, once released from paying the debt burdens of the buyout, earn significant dividends for their financial sponsors and are thus welcomed as cash cows in the portfolio. Finally, Schmidt and Steffen (2008) report significant influences from the market conditions on the choice of exit. Further empirical confirmation for this proposition has been encountered by Gompers and Lerner (2001) and Chiu et al. (2008), who present evidence of market timing by financial sponsors. In particular, the researchers show that venture capital funds liquidate their positions in encouraging times and correspondingly hold on to them in less promising times. Research in the field of refinancing possibilities of corporations confirms that market timing effects are a significant determinant (Pagano and Roell 1998; Golbe and White 1993; Lerner 1994). This brief review illustrates that the search for the most "valuable" exit option requires prudence. Evaluation cannot be one-dimensional, and it should account for the contextual factors discussed in previous paragraphs. Nevertheless investors and theorists generally propose a value-added pecking order for venture capitalists' exit strategies, which prefers IPOs to trade sales and the latter to buyouts. Bienz and Leite (2008) theorize that firms divested by an IPO are of higher quality compared to firms exited by a trade sale. Eventually this higher quality will materialize in amplified internal returns. The theory is motivated by agency deliberations arguing that the most profitable firms do not require intensive monitoring, allowing for divestment via an IPO. In contrast, less profitable companies that need severe control mechanisms are exited by a trade sale. Their theory is substantiated by empirical observations reporting a higher internal return for companies divested by an IPO (e.g., Nikoskelainen and Wright 2007; Bygrave and Timmons 1992).

Initial Public Offerings

Buyout and venture funds can exit from their investments by means of selling the company to the public. According to Wright et al. (2006), IPOs have traditionally played a major role as an exit vehicle in the United Kingdom, accounting for about 33 percent of all divestitures by private equity companies in the second half of the

1980s. Since then their impact has decreased to approximately 10 percent in the 1990s and to less than 5 percent from 2000 to 2005. An IPO is generally perceived as the dominant exit route for fast-growing companies with above-average performance (e.g., Schwienbacher 2005). As a matter of fact, venture capital funds are more likely to pursue that strategy during the portfolio company's growth phase than funds specializing in buyouts in mature industries (Das et al., 2003). It is commonly argued that IPO divestitures generate the highest returns, as they realize the most efficient asset price (Nikoskelainen and Wright 2007). This pattern emerges because the asset is broadly marketed to a diverse set of investors, consequently resulting in an auctioning process driving value (Biais et al. 2002). More important, as only high-quality firms can be taken public, the announcement of an IPO is also associated with a stronger signal of the ability of the managers of the LPE. In sum, evidence seems to be compelling to derive the following hypothesis:

Hypothesis 2: Divestments by means of IPOs generate the most positive market reactions.

Trade Sales

In a trade sale the entire company is sold to an outside strategic investor. In this type of arrangement the portfolio company is usually acquired by a competitor and subsequently merged with the acquirer. This exit strategy is the prevailing choice of financial sponsors and accounts for approximately 38 percent of all exits (Kaplan and Stroemberg 2009). Companies that are sold to strategic investors usually require enhanced monitoring. This is a sign that the portfolio companies' operating managers are not optimally aligned with value creation targets of the new owners. The choice of a trade sale might also be externally influenced by the mergers and acquisitions market environment. Findings indicate that mergers and acquisitions occur in waves (Harford 2005), so this factor might also influence investors' perception of the deal's substance. Furthermore the industry the company operates in might affect investors' sentiment in determining whether the trade sale is the best alternative. Researchers have found empirical evidence that relatively young and technology-intensive industries are not expected to be divested via trade sales (Das et al. 2003; Gompers and Lerner 2001). The wealth effects of corporate divestments through trade sales are positive (Haynes et al. 2002) but lower than the wealth effects of IPOs (Nikoskelainen and Wright 2007). In addition as the quality of the firms being exited via a trade sale is assumed not to be as high as that of companies being divested via an IPO, the signaling component of this announcement will be lower. Taking all these aspects into account, the following hypothesis summarizes our expectations:

Hypothesis 3: Divestments by means of trade sales are expected to generate lower positive abnormal returns than divestments via an IPO.

Secondary Buyouts

Secondary buyouts refer to the sale of portfolio companies from one financial sponsor to another. Kaplan and Stroemberg (2009) report that this route is responsible for up to 24 percent of conducted exits. Moreover they report the recent increasing utilization of this method. Secondary buyouts are generally seen as the least preferable option for PE funds and are associated with periods during which other exit mechanisms are less accessible. Nikoskelainen and Wright (2007) report that this exit mechanism is associated with returns that, albeit positive, are significantly lower than the returns from exits via IPOs and trade sales. In line with other previous findings (e.g., Schwienbacher 2005; Wright et al. 2006), we derive the last hypothesis:

> Hypothesis 4: Divestments by means of secondary buyouts are expected to generate lower positive abnormal returns than divestments via an IPO.

Data

We hand-collected information on all the exit announcements made by firms belonging to the S&P Listed Private Equity Index as of October 30, 2008.[6] The index currently comprises twenty-eight global companies and funds, among which are such well-known PE firms as KKR, 3i Group, and the Blackstone Group. We focus on the period between the beginning of 1998 and the end of 2007. We obtained information regarding the exit from Zephyr, a database provided by Bureau van Dijk, and we supplemented this data with the announcements reported on SDC. We collected stock price data from DataStream. Overlapping events within an event window of seven days are eliminated from the sample. In Table 22.1 we provide a description of the main variables used in this study. A correlation matrix is included in Table 22.2.

We classify the exit type as *IPO*, *Trade Sale, Secondary Buyout,* or *Stock Deal,* in line with previous literature A *Stock Deal* happens when a LPE announces the sale of stock of publicly traded institutions. We are also interested in analyzing how the stock price reacts to the announcements of a write-off of a portfolio firm; however, neither the databases nor manual searches deliver relevant information on these events. It remains unclear therefore whether write-offs are officially reported by LPE or are kept indefinitely in the books.

We control for the characteristics of the investment company by including a range of variables. *Assets* stands for the natural logarithm of a LPE's total assets as reported in the annual report in the year before the acquisition. This number is used as a proxy for the entity's size. We use one variable to capture the LPE's reputation. *Reputation Year* evaluates the number of years a financial sponsor is in business. Several papers (e.g., Phalippou 2007) argue that experience and

Table 22.1 Variables Description

Variables	Description
IPO	Dummy variable taking the value 1 when the exit is made via an IPO, 0 otherwise.
Trade Sale	Dummy variable taking the value 1 when the exit is made via a sale to a nonfinancial firm, 0 otherwise.
Secondary Buyout	Dummy variable taking the value 1 when the exit is made via a sale to a financial firm, 0 otherwise.
Stock Deal	Dummy variable taking the value 1 when the exit is made via the sale of shares of a public entity in the secondary market, 0 otherwise.
CAR	Abnormal returns on the stock of the LPE announcing the exit in the event window (–3, +3) where day 0 is the day of the announcement. Measured using the market model estimated over the period (–100, –10), using as benchmark the broadest S&P index of the country in which the LPE is traded.
Deal Value	Natural logarithm of the total value realized with the exit of the company.
Less30	Dummy taking the value 1 if less than 30% of the equity of the portfolio company is divested, 0 otherwise.
Bet3080	Dummy taking the value 1 if less than 80% and more than 30% of the equity of the portfolio company is divested, 0 otherwise.
More80	Dummy taking the value 1 if more than 80% of the equity of the portfolio company is divested, 0 otherwise.
Syndication	Dummy taking the value 1 if the portfolio company being divested was acquired in syndicate of investors, 0 otherwise.
Assets	Natural logarithm of the total assets of the LPE in the year before the announcement.
Reputation Year	Number of years a company has been active in the private equity business.
Reputation Dividends	Dividend yield of the stock at the moment of the announcement of the deal.
Market Runup	Sum of the market returns of the benchmark indices in the 66 trading days before the corresponding event window.
Stock Runup	Sum of the abnormal returns of the LPE stock in the 66 trading days before the corresponding event window.

Note: This table shows the description of the variables used in the empirical analyses.

learning are important characteristics to consider when assessing the quality of a fund. It is generally inferred that funds succeeding the first one deliver better performance than the initial managed funds. Moreover it might rationally be assumed that underperforming private equity companies cannot tap investors for fresh money, an aspect that automatically drives them out of the market.

Table 22.2 Correlation Matrix

	IPO	Trade Sale	Secondary Buyout	Stock Deal	CAR	Deal Value	Less30	Bet-3080	More80	Syndication	Assets	Reputation Year	Reputation Dividends	Stock Runup	Market Runup
IPO	1														
Trade Sale	−0.4195***	1													
Secondary Buyout	−0.2032***	−0.6144***	1												
Stock Deal	−0.1169*	−0.3533***	−0.1712***	1											
CAR	0.0389	−0.0262	−0.0224	0.0338	1										
Deal Value	0.1606***	−0.0882	0.1789***	−0.294***	−0.1117*	1									
Less30	0.0506	−0.3272***	−0.0816	0.6309***	0.059	−0.266***	1								
Bet3080	0.2966***	−0.1106*	−0.0469	−0.0785	−0.0691	0.0874	−0.1762***	1							
More80	−0.2533***	0.3533***	0.1018*	−0.474***	−0.0004	0.1613***	−0.7145***	−0.5628***	1						
Syndication	−0.0313	0.1739***	−0.0307	−0.2213***	−0.0461	0.0698	−0.318	0.0345	0.2425	1					
Assets	−0.015	0.0224	0.0799	−0.1393**	−0.1256**	0.0297	−0.283	0.0473	0.2041***	0.1704***	1				
Reputation Year	−0.0855	0.1243**	0.043	−0.1813***	−0.0778	−0.12**	−0.3007***	0.0294	0.2316***	0.1913***	0.5524***	1			
Reputation Dividends	−0.0574	−0.0239	0.0769	−0.0058	−0.0833	0.0948	−0.022	−0.0013	0.0194	−0.1287**	−0.1824***	−0.0322	1		
Stock Runup	−0.0095	0.0964	−0.0077	−0.1453**	−0.2827***	0.0326	−0.0318	−0.0028	0.0287	0.0794	0.0258	0.0758	0.0274	1	
Market Runup	−0.0219	−0.0017	−0.0019	0.0309	0.0222	0.0498	0.0233	0.0393	−0.0474	−0.005	−0.0824	−0.093	−0.1305**	0.0719	1

Notes: This table present the correlation coefficients between all the variables described in Table 22.1. Significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

Hence the years a company manages to survive is expected to be a valid indicator for its reputation. In addition we use the variable *Reputation Dividends*, which captures the dividend yield of the LPE at the time of announcement of the deal. Corporate finance literature shows that dividends are a signal for the development of a corporation and reduce concerns related to agency problems in the company (Miller and Rock 1985).

A set of variables is used to control for deal and portfolio company characteristics. *Deal Value* stands for the natural logarithm of the realized deal value and represents a proxy for the enterprise value of divested portfolio companies, which cannot be directly identified due to data restrictions. Papers analyzing announcement effects apply a corresponding reasoning related to the deal value (e.g., Hagendorff et al. 2008). In addition two dummy variables, *less30* and *bet3080*, are included to differentiate among the different percentages of the portfolio company being divested.[7] *Syndication* refers to a portfolio company that has been acquired by a syndicate of investors. The intention behind this dummy is to reveal whether syndicated deals achieve better or weaker abnormal returns. Research in the area of syndicated private equity transactions (Meulemann and Wright 2008) underlines that these deals have specific characteristics, for example increased monitoring through the combination of the expertise of several parties.

We also use controls for market conditions. *Market Runup* is defined as the sum of the market returns of the benchmark indices in the sixty-six trading days before the corresponding event window. This variable is often applied in empirical studies (e.g., Heron and Lie 2004) to test whether the development of the benchmark index can explain the variation in the dependent variable. In congruence *Stock Runup* is defined as the sum of the LPE's abnormal returns in the sixty-six trading days before the event window.

Our sample comprises 279 events, representing exits by seventeen LPE companies between 1998 and 2007. Criteria to derive this sample are the possibility of unambiguous classification of the exit type and announcement date, as well as the availability of transaction characteristics, such as descriptions for variables related to syndication, percentage of ownership transferred, and deal value. Table 22.3 gives an overview of the sample distribution.

More than half of the observations are exits announced by the U.K. firm 3i Group. To avoid reaching conclusions that apply only to this specific firm, we leave it out of our main analysis, although we run some robustness checks including its announcements as well. The most active companies in the resulting sample are Gimv, Ratos, and Bure Equity, but almost 50 percent of our observations come from less active LPEs. The firms in the sample are rather large, with average total assets of almost $4 billion. They have been involved in the PE industry for twenty years on average, and almost all of them have paid dividends in the past ten years.

Table 22.3 Overview of Exits

Name	Type of Exit				Total	
	IPO	Trade Sale	Secondary Buyout	Stock Deal	N	Percentage
Panel A—Distribution of the Different Types of Exits						
Allied Capital Corporation	1	5	4	0	10	7.87
American Capital Ltd	0	5	3	0	8	6.30
Bure Equity AB	1	7	3	5	16	12.60
Eurazeo SA	0	0	2	0	2	1.57
Fortress Investment Group LLC	2	0	0	1	3	2.36
Gimv NV	8	12	5	6	31	24.41
Hercules Technology Growth Capital	0	3	0	0	3	2.36
Intermediate Capital Group plc	0	1	3	0	4	3.15
Internet Capital Group Inc.	0	8	0	0	8	6.30
Jafco Co., Ltd	1	1	0	0	2	1.57
MCG Capital Corporation	0	1	0	0	1	0.79
MVC Capital Inc.	0	1	0	0	1	0.79
Onex Corporation	2	4	1	4	11	8.66
Ratos AB	1	10	4	2	17	13.39
The Blackstone Group LP	0	2	0	0	2	1.57

Wendel Investissement SA	3	0	3	2	8	6.30
Total subsample excl. 3i Group	19	60	28	20	127	*100*
Relative frequency (%)	14.96	47.24	22.05	15.75	*100*	
3i Group plc	15	96	36	5	152	*54.48*
Total sample incl. 3i Group	34	156	64	25	279	*100*
Relative frequency (%)	12.19	55.91	22.94	8.96	*100*	

Panel B—Firm characteristics

	Mean	Median	Std. Dev.
Assets (in million euros)	3,901	1,518	5,170
Reputation Years	19.69	20	11.94
Reputation Dividends	2.69	2.09	2.33

Notes: Panel A gives the overview of the exits discriminated by firm and type of exit. Panel B presents descriptive statistics related to the firms and funds under analysis. The sample consists of the exits by all the quoted entities belonging to the S&P Listed Private Equity Index as of October 30, 2008, and having divestments announced in Zephyr or Thomson Financial. We exclude announcements that could not be clearly identified as pertaining to a specific exit type or for which no information on the other variables was available.

Table 22.4 presents descriptive statistics associated with each type of exit. The exit mechanism used the most often is trade sales, accounting for 47 percent of the observations, which is in line with previous research (e.g., Cumming 2008). Next are secondary buyouts, accounting for 22 percent of all the exits, while stock deals and IPOs split the remaining almost evenly (16 and 15 percent, respectively). Exit by a trade sale is true of 78.33 percent of the cases associated with a divestment of more than 80 percent stake in the former portfolio company. In contrast, stock deals have been found to almost exclusively (95 percent) pertain to positions smaller than 30 percent. Interestingly, the descriptive statistics display no evident trend regarding the role of syndication, as the three main exit routes do not show much variation. IPOs are associated with the largest deals (Biais et al. 2002), but the median secondary buyout is larger than the median IPO. Stock deals involve the sale of minority positions in public firms and are considerably smaller on average than any of the other exit types.

Results

Methods and Univariate Analysis

We start by running a standard event study at the time of the announcement of the exit. In Figure 22.1 the average, median, and cumulative abnormal returns (CAR)

Table 22.4 Descriptive Statistics

Variables		IPO	Trade Sale	Secondary Buyout	Stock Deal	Total Sample
Total Exits		19	60	28	20	127
Less30		7	9	7	19	42
Bet3080		7	4	4	1	16
More80		5	47	17	0	69
Syndication		7	22	10	3	42
Deal Value (in thousands euros)	Mean	346,094	148,496	309,727	81,418	203,041
	Median	165,600	70,442	235,810	14,387	84,095
	Std. Dev.	419,075	230,364	322,424	213,513	297,437

Notes: This table displays the descriptive statistics of our sample. All the variables are described in Table 22.1. The sample consists of all the exit announcements made by the firms defined in Table 22.3, excluding 3i Group.

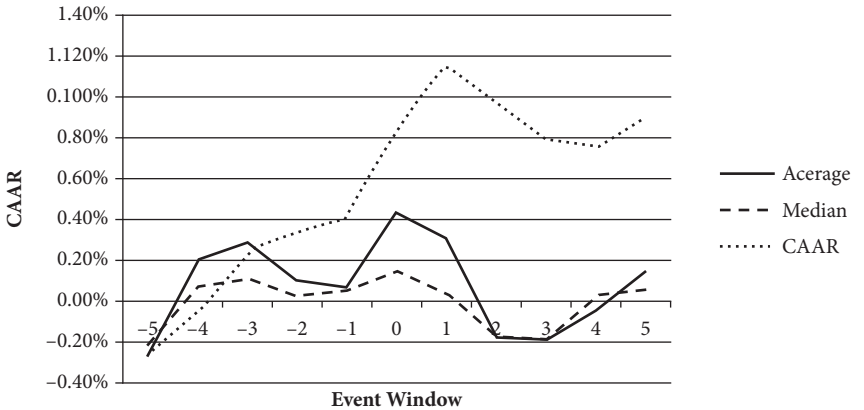

Figure 22.1 Average, median, and cumulative abnormal returns in a ten-day event window surrounding an exit announcement.

are presented. It is noticeable in Figure 22.1 that there is a positive market reaction to the announcement of an exit. This reaction seems to be somewhat dispersed over time, suggesting that some leakage of the news might be happening (e.g., Brown and Warner 1985). In Figure 22.2 we see that IPOs clearly show a magnified effect compared to the remaining exit routes. There are two possible reasons for this outcome. On the one hand, leakage might be an artificial consequence of delayed or inaccurate recognition of the announcement in third-party databases from which we have collected the data. On the other hand, the reaction might be related to insider trading occurring before information is released (e.g., Meulbroek 1992). IPOs are considerably more prone to this effect due to the involvement of numerous parties and opportunistic stock trading of participating agents (Heidle and Li 2004). As a result we use in our analysis an event window (–3, +3) relative to the announcement date in order to account for the identified leakage, but avoiding a substantial decrease in the power of the test (Brown and Warner 1980).

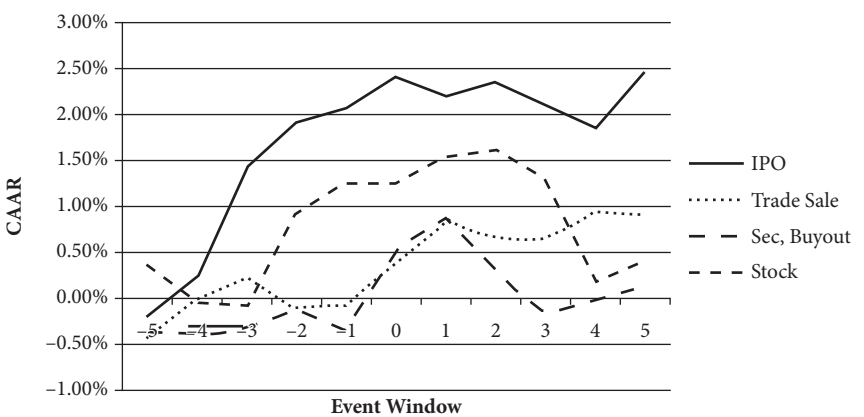

Figure 22.2 Cumulative abnormal returns in a ten-day event window surrounding an exit announcement sorted per exit type.

Although Figure 22.1 shows results that seem to be in line with our central prediction—that exits are welcomed by investors in LPEs—it gives us no information on the possibility of different impacts depending on the type of exit. In Figure 22.2 we present the cumulative abnormal returns for each type of exit: IPOs, trade sales, secondary buyouts, and stock deals. Announcements of IPOs cause the highest abnormal returns, followed by stock deals, trade sales, and secondary buyouts. However, the positive announcement effect of stock deals almost vanishes after five days, while the positive returns from IPOs and trade sales announcements seem to be more resilient.

In Table 22.5 univariate statistics related to the event study are reported. The average CAR is significantly different from zero in all the event windows reported, consistent with our hypothesis that exit announcements trigger positive abnormal returns. However, it can be observed in Panel B of Table 22.5 that these results are mostly driven by the very positive abnormal returns associated with the announcement of IPOs. Stock deals are also associated with positive abnormal returns, but there is more heterogeneity in the observations. Secondary buyouts trigger the least positive market reaction.

Table 22.5 Univariate Analysis (percentages)

	IPO	Trade Sale	Sec. Buyout	Stock
Panel A: Cumulative Abnormal Return per Event Window				
		(–1; +1)	(–3, +3)	(–5, +5)
Average		0.82***	0.84**	0.94*
Standard Deviation		3.35	4.51	5.75
Panel B: Cumulative Abnormal Return per Exit Type (–3, +3)				
Average	1.86**	0.65	0.22	1.35
Standard Deviation	3.44	4.65	3.98	5.68
Panel C: Differences in the CAR (–3, +3) between the Different Exit Types				
IPO	–	1.21	1.64	0.51
Trade Sale		–	0.43	–0.70
Secondary Buyout				–1.13
Stock Deal				

Notes: This table displays the univariate analysis of the announcement returns. All the variables are described in Table 22.1. The sample consists of all the exit announcements made by the firms defined in Table 22.3, excluding 3i Group. Panel A shows the cumulative abnormal returns of different event windows. Panel B shows the cumulative abnormal returns in the window (–3, +3) relative to the announcement day, per exit type. Panel C shows the difference in cumulative abnormal returns in the window (–3, +3) relative to the announcement day between the exit types indicated in the first column and the exit type indicated in the other columns. Significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

Multivariate Analysis

Our univariate results show that exits announced by LPEs are welcomed by the stock market, resulting in positive abnormal returns. A comparison across the different exit types suggests that the announcement of IPOs causes the strongest market reaction, in line with our hypothesis. We now test for the presence of this effect in a multivariate setting. We regress the CAR in the event window (–3, +3) on the type of exit and the set of control variables described earlier. Variable definitions can be found in Table 22.1. We run the analysis using year and firm fixed effects, the latter based on each of the LPEs included in our sample. As a robustness check we also present the results without the firm fixed effects. We use stock deals as the baseline scenario; these exits are the least likely to suffer from information asymmetry problems since stock holdings have a known market price. The results are reported in Table 22.6.

The IPO dummy is statistically significant in all the models, implying that exit via an IPO increases the LPE stock price by 3 to 5 percent. The other types of exit also have positive coefficients when compared to stock deals, but only the trade sales' coefficient is significantly different from zero, and only in the last model. This is consistent with our hypothesis that a pecking order of exits subsists, in which IPOs are the preferred method, followed by trade sales. Secondary buyouts and stock deals cannot be distinguished in terms of returns. Overall our results are consistent with previous evidence that IPOs are the preferred exit mechanism that can be used only with high-quality firms (Gompers and Lerner 2001; Nikoskelainen and Wright 2007).

Our control variables also support some of our predictions. *Deal value* and *Assets* are negatively correlated with returns, which can be expected given the negative relation between firm size and information asymmetry. In a bigger deal, or in a larger firm, investors already have more information, and as a result react less enthusiastically to the announcement of an exit. The negative signs on the market and stock run-up can also be explained by a similar reasoning. If the stock or market is falling (rising), exiting a deal can be seen as more (less) valuable due to a higher (lower) need of signaling quality. The variables capturing the share of the investment that is being exited do not have a significant impact on the CAR, nor does the fact that the investment was made in a syndicate. The impact of the dividend yield disappears once firm fixed effects are introduced, but is consistent with the notion that dividend-paying firms enjoy a better reputation, and hence the impact of resolving information asymmetry and signaling deal quality is smaller. This is consistent with the rich literature reasoning that dividend policies address agency problems between corporate insiders and outside shareholders (e.g., Easterbrook 1984; Jensen 1986; Gomes 2000). Only two of the firm fixed effects are statistically significant, namely MVC Capital (coefficient of 3.8 percent) and Blackstone Group (coefficient of 1.78 percent). The exits made by these firms represent 3 percent of all the observations, implying that firm-specific effects are not very strong in our sample. In unreported analyses we also study whether the effect of the exit differs between civil law and common law countries, but we do not find any significant results.

Table 22.6 Multivariate Analysis

Variables	(1) CAR	(2) CAR	(3) CAR	(4) CAR
IPO	0.0284*	0.0380**	0.0319*	0.0542***
	(0.0146)	(0.0147)	(0.0166)	(0.0175)
Trade Sale	0.0127	0.0154	0.0137	0.0227*
	(0.0098)	(0.0096)	(0.0128)	(0.0126)
Secondary Buyout	0.0133	0.0149	0.0183	0.0196
	(0.0125)	(0.0112)	(0.0130)	(0.0126)
Deal Value	−0.0042*	−0.0029	−0.0031	−3.66e−05
	(0.0025)	(0.0026)	(0.0029)	(0.0026)
Stock Runup	−0.0929***	−0.1010***	−0.0965***	−0.1240***
	(0.0223)	(0.0199)	(0.0199)	(0.0187)
Market Runup	−0.0480	−0.1010	−0.0959*	−0.1050*
	(0.0542)	(0.0673)	(0.0533)	(0.0621)
Less30			0.00171	0.0188
			(0.0114)	(0.0132)
Bet5080			−0.0119	−0.0125
			(0.0127)	(0.0139)
Syndication			0.0065	0.0020
			(0.0093)	(0.0095)
Reputation Dividends			−0.0027**	−0.0040
			(0.0012)	(0.0035)
Reputation Year			7.85e−05	−0.0006
			(0.0003)	(0.0007)
Assets			−0.0040	−0.0345***
			(0.0039)	(0.0131)
Constant	0.0725**	0.0212	0.0829*	0.2580**
	(0.0343)	(0.0565)	(0.0439)	(0.1090)
Year fixed effects	YES	YES	YES	YES
Firm fixed effects	NO	YES	NO	YES
Observations	127	127	127	127
Adjusted R-squared	0.1523	0.1331	0.1656	0.2292

Notes: This table shows the multivariate regression on the CAR. All the variables are described in Table 22.1. The sample consists of all the exit announcements made by the firms defined in Table 22.3, excluding 3i Group. Robust standard errors clustered at a firm level are reported in parentheses. All models include year dummies. Models 2 and 4 include firm-specific dummies. Significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

As a robustness check, we rerun our analysis by including the deals announced by 3i Group. These deals make up more than 50 percent of our sample, raising concerns that any results reported are driven by the presence of 3i Group. To mitigate this issue we use only models with firm-fixed effects. As can be seen in Table 22.7,

Table 22.7 Robustness Check

Variables	(1) CAR	(2) CAR
IPO	0.0241**	0.0285*
	(0.0122)	(0.0147)
Trade Sale	0.0128	0.0125
	(0.0080)	(0.0108)
Secondary Buyout	0.0112	0.0107
	(0.0094)	(0.0113)
Deal Value	−0.0032	−0.0031
	(0.0020)	(0.0020)
Stock Runup	−0.0729***	−0.0826***
	(0.0247)	(0.0228)
Market Runup	0.0227	0.0348
	(0.0460)	(0.0431)
Less30		0.0010
		(0.0104)
Bet5080		−0.0132
		(0.0083)
Syndication		0.0005
		(0.0058)
Reputation Dividends		−0.0020
		(0.0031)
Reputation Year		−0.0244**
		(0.0113)
Constant	0.0229	0.2470**
	(0.0241)	(0.1140)
Year fixed effects	YES	YES
Firm fixed effects	YES	YES
Observations	279	279
Adjusted R-squared	0.0469	0.0646

Notes: This tables displays the results of the robustness checks. The variables are described in Table 22.1. The sample consists of all the exit announcements made by the firms defined in Table 22.3. Robust standard errors clustered at a firm level are reported in parentheses. All models include year- and firm-specific dummies. Significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

the results are comparable to the previous analysis, with the dummy IPO still being significant. Overall we find strong support for the hypothesis that IPOs are the preferred exit mechanism for investors, and some support for the hypotheses that trade sales and secondary buyouts come next in the pecking order of exits.

Discussion

In general the results of this study allow for a discussion on two different levels. First, we discuss the leading hypothesis of this paper: that exit announcements trigger significantly positive share price reactions. Second, a short discussion is provided of our findings substantiating a pecking order of exits.

Our expectation regarding returns has been derived from agency theory (Jensen and Meckling 1976), and signaling theory (Spence 1973). We argue that LPE managers could exploit exit announcements as a signal to the capital market that their portfolio companies have undergone a positive development. As a supplement supporting this theoretical construct, a review of regular closed-end fund literature has shown that the announcement of a fund's dissolution triggers positive abnormal returns and represents a relatively well-established empirical phenomenon (Brauer 1984; Brickley and Schallheim 1985). We argue that positive abnormal returns at exit announcements of LPEs are associated with the fact that these firms usually trade at a discount to their net asset value (Kaserer and Lahr 2009), as exits mitigate the information asymmetry between LPE investors and managers. The findings of this study for LPEs seem to be comparable to the effect of opening a closed-end fund in a gradual way, since listed private equity vehicles cannot become open-ended by definition.

Investors perceive the exit as a positive signal of the fund managers' qualities. It has been argued in the hypothesis generation, with reference to Spence (1973), that only good managers are able to bear the cost of divesting. Cost in this context has been associated with the potential loss of reputation. The presence of information asymmetry indicates that investors generally mistrust LPE managers. On the one hand, this mistrust might fundamentally relate to the circumstance that reported valuations of portfolio companies are not consistent with market prices. Exit announcements help to overcome this information gap. On the other hand, the positive returns could also stem from the mistrust in the LPE managers' ability to further develop and monitor the company. LPE managers might fear this risk factor and decide not to gamble on further portfolio company growth, but to increase their reputation by exiting. This consideration conforms to Gomper's (1996) and Kandel et al.'s (2006) insights that in certain cases exits are conducted too early. LPE managers therefore have to face a trade-off: exiting, thereby signaling that they are worth the investors' trust, or continuing to develop the portfolio

company. Good managers are supposed to be able to handle this situation by finding an equilibrium pertaining to the latter trade-off.

Furthermore our results suggest that a pecking order of exits exists. The interpretation of this fact is rather complex, since this result does not necessarily mean that companies being exited by IPOs are more profitable deals in terms of internal rates of return. Instead this finding might tells us something more fundamental about the quality of the divested asset. In line with Bienz and Leite (2008), we argue that firms being divested by IPOs are of higher quality compared to portfolio firms being exited by trade sales and secondary buyouts. The announcement of an IPO therefore immediately exhibits that the company under consideration does not need intensified monitoring, but rather is able to be operated with a dispersed ownership structure. As a result the announcement of an IPO may send a positive signal about the ability of the manager. Nevertheless it is likely that our findings are driven by both the signaling component of the IPO and the fact that a higher return is achieved using this mechanism.

Acknowledging that signaling represents one of the dominant devices to overcome information asymmetry, it is hard to distinguish empirically whether it is the pure resolution of information asymmetry regarding the value of the LPE investments or the signaling component that is driving the positive results that we document. Consistent with the importance of information asymmetry resolution, we find that all exit types are associated with positive returns, and that these are inversely correlated with the firm size. Consistent with an explanation more centered on the signal conveyed, we find that IPOs are associated with the most positive abnormal returns, and that the reputation and recent performance of the firm are negatively correlated with the abnormal returns. From these insights it can be inferred that the pure resolution of information asymmetry represents a dynamic process that adjusts the contemporary LPE valuation. The signaling component, however, adds value because of the positive message transmitted regarding the future actions of the LPE manager.

Summary and Conclusion

Our study is part of a recent strand in the literature that analyzes private equity firms and funds that opted for being listed in the stock market. We are the first to focus on the exit strategy of these firms and on their impact on the market value of the firm. To this purpose, we hand-collected data on all the exit announcements made by the largest LPEs in the world. We measured the market reaction to these announcements and their cross-sectional differences.

Consistent with our hypothesis that divestitures can be used to mitigate information asymmetry and signal managers' ability, we find that exit announcements

are associated with positive abnormal returns. Consistent with our hypothesis that a pecking order of exits subsists, we find that IPOs trigger the highest abnormal returns, followed by trade sales and secondary buyouts. This can be explained by the fact that a better price might be achieved in an IPO, but we argue that in this respect the signaling role of IPOs is also important as only high-quality firms can be divested in this way. Overall our results are in line with the expectation that exits in the PE industry can be used to overcome information asymmetry and corporate governance problems.

Notes

1. "Private Equity Goes Public for $5 Billion: Its Investors Ask, What's next?," *New York Times*, November 10, 2006.
2. We refer to LPE houses for listed companies and LPE funds for quoted investment funds.
3. Dimson beta is based on Dimson's (1979) regression, which accounts for the bias that a stock is infrequently traded.
4. "Get a Grip: The Hollow Bullishness of Buy-out Firms' Bosses," *Economist*, November 27, 2008.
5. Investors in nonlisted PEs usually have access to detailed information and have direct contact with the general partners (Sahlman 1990).
6. A potential concern with using LPE data is the low liquidity usually associated with these stocks. The S&P Listed Private Equity Index requires the constituents to be daily traded at a threshold level of $1 million. In addition it requires a minimum market capitalization of $250 million. These two criteria are of great value in minimizing biases and anomalies in the stocks' returns.
7. A continuous variable would have been the preferred choice regarding the divested percentages, but databases do not always allow the retrieval of the exact figure. Therefore we opt for using a dummy variable and keeping more observations in our sample.

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PART VII

INTERNATIONAL PERSPECTIVES ON PRIVATE EQUITY

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CHAPTER 23

BUYOUTS AROUND THE WORLD

CHRISTIAN ANDRES, ANDRE BETZER, AND JASMIN GIDER

Over the past decade buyout activity has rapidly spread out from the Anglo-Saxon markets to other countries with different institutional environments. Buyouts can solve monitoring inefficiencies and incentive problems. Thereby they can function as a corporate governance mechanism.

The potential and possibility to pursue governance-improving strategies is likely to depend on the legal and institutional context. A priori it is not clear how the institutional environment may affect buyouts. On the one hand a malfunctioning institutional environment may create the potential for corporate governance-improving strategies. On the other hand buyouts themselves may require a well-functioning environment to act as a corporate governance mechanism. This chapter aims at providing answers to the following questions: How do legal and institutional factors affect buyout activity? Do the buyout models differ among different institutional contexts?

The definition of buyouts in this chapter follows closely Wright et al. (2009). In a typical buyout transaction, a private equity investor and a management team buy the shares of a company from its current owners. The bid often takes the form of a leveraged buyout (LBO) involving mainly debt financing from commercial or investment banks. If the buyout is led by the *incumbent* management team it is called management buyout (MBO), and if it is led by a management group *from outside the firm* it is called management buyin (MBI).

Empirical studies investigating buyouts on the target level mainly focus on three different research questions: First, what is the effect of private equity–backed buyouts on firm performance and firm value? Second, how does the market assess

the drivers of these potential performance and value changes that will shed light on the investment strategies of private equity funds? Third, what are the main rationales of private equity funds in their decision to acquire target companies? This chapter tries to answer these questions against the background of different institutional contexts. However, we do not look at performance and investment strategies on the fund level, as such an analysis would go beyond the scope of this chapter (see, e.g., Cumming and Walz 2010).

The chapter is organized as follows. We first describe the buyout activity in different countries. Thereafter we establish a relationship between the institutional environment, the quality of corporate governance, and buyouts. Next we review the extant empirical evidence of buyout strategies pursued in different geographical regions and relate those findings to the institutional environments.

Buyout Activity around the World

The World Economic Forum (WEF; 2008) report and the recent survey by Wright et al. (2009) on the global impact of private equity both provide evidence that the buyout market has grown dramatically over the past two decades worldwide. Figure 23.1 shows that buyouts, in the 1980s primarily a U.S. phenomenon,

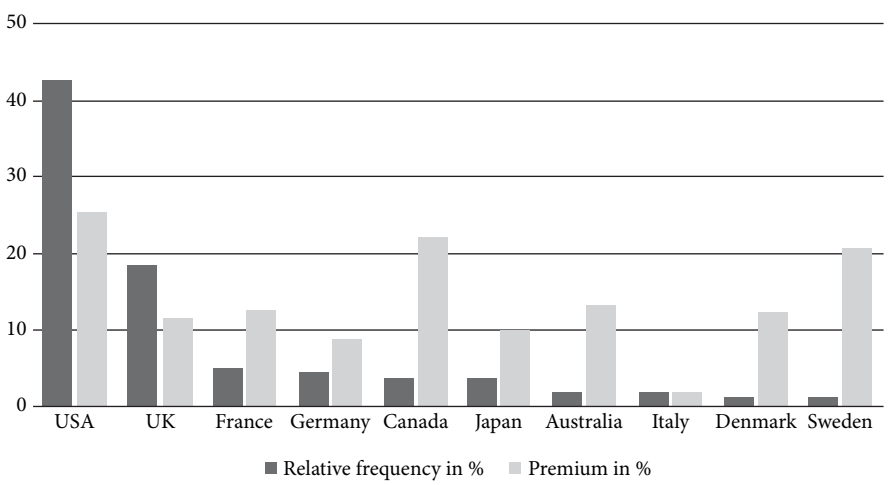

Figure 23.1 LBO activity and premiums. The figure shows the relative frequency in terms of numbers of LBOs in percentages from 1995 to 2007 in the ten countries with the highest LBO activity. It also shows the average premium in percentages of the LBOs calculated as the final bid price minus share price one day prior to the initial announcement over the share price one day prior to the initial announcement. The figures are from Cao et al. (2010).

nowadays have become more and more an international phenomenon. According to Figure 23.2, the average buyout volume in countries other than the United States, and particularly in Continental European countries, has increased substantially from 2002 to 2006 compared to 1998 to 2001. However, the WEF (2008, 8) report shows that in spite of the high growth rates all over the world, buyout "transactions outside North America and Western Europe are relatively few, accounting for approximately 12% of the number (9% of the enterprise value) of global (buyout) transactions over the period from 2001 to 2007." Figures 23.1 and 23.2 support this fact, as they show the buyout activity in the major private equity markets and the dominance in terms of frequency and volume by the U.S. market.

Against common wisdom, the WEF (2008) report shows that buyouts do not occur only in mature industries, as has been predicted by the literature (e.g., Jensen 1989), but also in high-growth industries, particularly during the past decade. The authors argue that this can be potentially explained by the fact that "private equity firms are deliberately broadening their industry scope beyond the mature, high cash flow, high debt capacity type of industries that they initially targeted" (WEF 2008, 8). Figure 23.1 documents another very interesting insight about the impact of private equity around the world: the average premiums paid by private equity funds in North American countries are higher than in all other countries around the world. The fact that the activity and the shareholder wealth creation differ among countries suggests that the institutional and legal context substantially matters for buyouts. We hypothesize that by looking deeper into the institutional differences between countries and regions we are able to offer potential explanations for these differences.

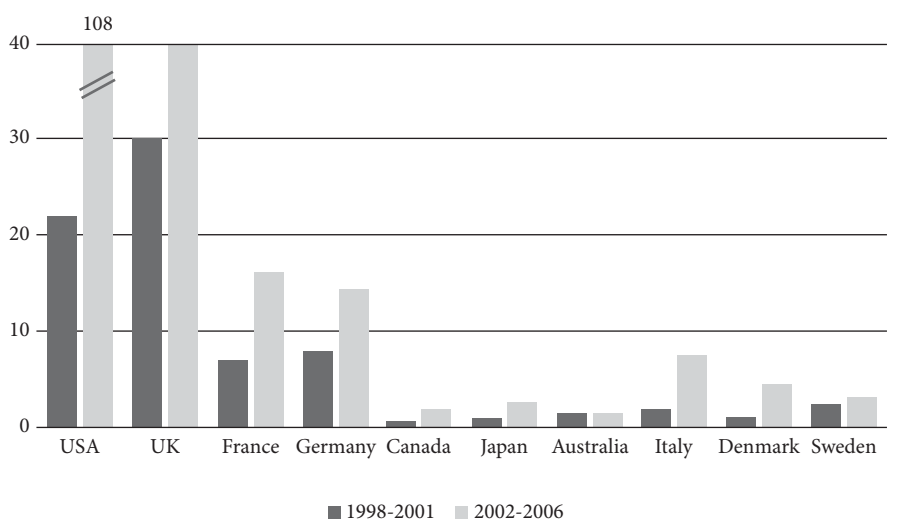

Figure 23.2 Average buyout volume. This figure shows the average buyout volume for two periods (1998–2001 and 2002–2006) in EUR bn for the ten countries with the highest LBO activity. The figures are from Wright et al. (2009).

Private Equity and Corporate Governance: Institutional Environments

In recent years the literature on private equity investments has increasingly examined the relationship between private equity and corporate governance structures. As a consequence of their investment strategies, private equity involvement typically leads to significant changes in the target firms' ownership and capital structure and therefore creates a unique corporate governance environment. Given the rise of private equity investments in international markets, it becomes more and more important to analyze how different institutional settings and country-level corporate governance structures affect the way private equity funds can create value through these changes in firm-level governance. We discuss the importance of corporate governance in the context of private equity investments and then provide an overview of the differences in corporate governance patterns around the world and their implications for private equity funds.

The need for corporate governance is a direct result of agency problems. These conflicts between financiers and managers who are in charge of running a company evolve from the separation of ownership and control (Fama and Jensen 1983; Jensen and Meckling 1976). As an entrepreneur turns to investors outside the firm for external financing of investment projects (or simply to cash out his stake), ownership and control are no longer concentrated. In an ideal world the owners and the manager could agree on a contract that ensures that the manager does not waste the investors' funds by investing in unattractive projects or simply steals it. However, since complete contracts are infeasible, investors have to give management the discretion to make important decisions on their own. As a consequence managers end up with a high degree of discretion that allows them to allocate funds that belong ultimately to investors.

There are several possible ways managers can abuse the power given to them by their shareholders. The simplest way would be to steal investors' funds. Even though the expropriation of company funds through transfer pricing or the sale of assets to a company that is owned by the management team still seems to be a common practice in some countries, the legal framework and law enforcement should protect investors in most developed countries from outright theft.

In most cases, however, managers will divert company assets to themselves with more subtlety. If managers are not monitored closely enough, they might allocate funds to projects that increase their personal utility rather than maximize the company's cash flow. For example, managers have the incentive to induce their companies to grow beyond the optimal size, as their personal compensation is usually positively linked to the amount of assets under their control. As described by Jensen's (1986) free cash flow (FCF) theory, managers in mature and widely held firms with large and stable cash flows will have both the incentive and the discretion to spend cash flows (that could otherwise be paid out to shareholders) in suboptimal investment projects. But how can shareholders distinguish between profitable projects and investments that primarily benefit managers? Shareholders

in widely held firms will most likely not be informed well enough and refrain from investing their personal resources in monitoring activity, which results in the so-called free-rider problem (Grossman and Hart 1980; Holmstrom 1982).

Corporate governance aims to mitigate these owner-manager problems. In addition to legal protection, corporate governance mechanisms also include economic institutions (e.g., self-regulation, takeover markets). Ownership by large investors is the most common nonlegal approach to corporate governance. It can be an effective way of protecting shareholders' interests and of preventing managerial self-dealing. Since private equity funds—in particular in public-to-private (PTP) transactions—usually seek to acquire majority stakes in their target firms, private equity and leveraged buyouts can be regarded as a market-based corporate governance mechanism.

In contrast to small shareholders, private equity funds have a sufficiently large stake that it pays for them to spend resources to monitor management. As large blockholders, they provide a solution to the free-rider problem (Shleifer and Vishny 1986). In addition to a greater incentive to actively decrease agency costs, it is much easier for large shareholders to coordinate their actions and put pressure on managers since voting power is not split among a highly segmented group of investors. Even though large shareholders still rely on a legal system that protects their ownership, they need less protection to enforce their claims and are able to act with only minimal support by judicial bodies. If managers repeatedly act against the wishes of the large investor, they are likely to be displaced soon. Therefore private equity funds in their role as large blockholders differ from small shareholders in that they have not only the incentive to decrease agency costs, but also the power to do so.

In addition to an increase in the shareholdings of a dominant investor and more active monitoring, private equity involvement in the form of buyouts changes the corporate governance setting of the target firm, as equity under management control is also more concentrated. Increased management ownership leads to an alignment of incentives between investors and the management team. Morck et al. (1988) show empirically that the incentive-alignment effect dominates the detrimental performance effect of entrenched managers for low levels of management ownership (< 5 percent).

Agency costs in buyout transactions are further reduced through high levels of debt financing. The impact of high leverage on managerial incentives is twofold. First, in contrast to equity holders, creditors have a contractually fixed claim that would even allow them to take control of the firm if these obligations are not met. The nature of this fixed claim implies that debt-servicing costs (i.e., interest and principal) reduce the firm's FCF, and therefore the funds under management control. Second, the obligation to serve high interest payments puts pressure on managers, which will lead to more disciplined investment decisions. Faced with an increased probability of loan default, managers are more financially responsible, as a default would imply the loss of management's equity investment and their jobs when the company is liquidated.

In sum, private equity investments can potentially decrease agency costs and act as a corporate governance mechanism in the following ways: (a) an increased ownership concentration and the presence of a dominating shareholder results in more active monitoring; (b) increased equity ownership by managers leads to an incentive-alignment effect between management and other shareholders; and (c) the intensive use of debt reduces the amount of FCF under management control and motivates managers to be more efficient.

These mechanisms all imply that financial contracts are written to assign control rights and cash flows to the different parties involved, that is, the private equity investor, management, and debt holders. However, it is generally accepted that contracts can never be complete, covering all possible scenarios. In addition it might be costly or even impossible to enforce contracts. Therefore the economic value of the rights that are attached to a contract will be dependent on the legal rules of the jurisdiction where the securities are issued and on the quality of their enforcement.

A new strand of literature, stimulated by the 1998 article "Law and Finance" by La Porta et al., addresses the question of how investor protection, legal rules, and the quality of their enforcement affect the development of capital markets and the financing pattern of companies in different jurisdictions. The key concepts of the so-called law and finance literature are based upon the rationale that outside investors are willing to pay more for financial assets if their rights are better protected by law. As pointed out above, shareholders will have to rely on legal means to ensure that they get an adequate return on their investment if managers act in their own interests. With better legal protection, they can assure themselves that a larger part of the company's profits will be paid out to them as opposed to being spent on investment projects that primarily benefit entrenched managers. In this way shareholders will be more willing to invest and entrepreneurs will find it easier to finance their investment projects externally. In this sense laws and the quality of enforcement are important determinants of the development of financial markets and economic growth.

La Porta el al. (1998) examine how legal rules that protect shareholders and creditors differ across forty-nine countries around the world and analyze whether these variations can help to explain differences in corporate ownership patterns. Based on the idea that the commercial laws of different countries generally originate from only a few legal traditions (Watson 1974), they classify countries as either civil law or common law countries. Civil law derives from the Romano-Germanic legal tradition and mainly uses statutes and codes as means of ordering legal rules. Among civil law countries, La Porta et al. further differentiate between the French, German, and Scandinavian legal families. In addition to Continental European countries (and regions that were conquered by these countries in the colonial era), the legal systems of countries such as Japan, South Korea, and Taiwan are based on civil law. In contrast to civil law, the conceptual framework of common law (which is English in origin) is shaped by judges who base their decisions on precedents from other judicial disputes. Due to its English origin, common law has

primarily spread over British colonies, such as Australia, Canada, India, and the United States.

For each of the forty-nine sample countries, La Porta et al. (1998) analyze company and bankruptcy laws that are concerned with (a) the legal relations between insiders (i.e., directors or managers and shareholders) and (b) the legal relations between the corporation and creditors. More specifically the authors inspect company and bankruptcy laws concerning shareholder and creditor rights and examine proxies for the quality of the legal enforcement of these rules. Aggregating the resulting variables for each country, their analysis shows that laws vary substantially across countries, which is largely due to differences in legal origin. Generally speaking, common law countries have the strongest and civil law countries the weakest protection of investors' rights and interests. Shareholders as well as creditors are best protected in common law countries, while French civil law countries offer the weakest protection. German and Scandinavian civil law countries offer intermediate levels of investor protection. The quality of law enforcement is highest in German and Scandinavian civil law countries, slightly lower in common law countries, and lowest in French civil law countries.

In addition the study shows that corporate governance mechanisms have adapted to these differences in investor protection by establishing nonlegal substitutes like concentrated ownership structures. In line with the arguments discussed above, La Porta et al. (1998) find a negative correlation between the quality of legal protection and the concentration of equity ownership. Accordingly the highest concentration is found in French civil law countries.

The findings of La Porta et al. (1998) have important implications for private equity funds. As pointed out before, private equity transactions potentially serve as a corporate governance mechanism that mitigates the conflict of interest between managers and a group of small shareholders. On the one hand, the value gains that private equity funds can realize should be largest in countries with the lowest level of investor protection since firms with dispersed ownership structures should trade at a discount in jurisdictions where minority shareholders are not well protected. As dominant shareholders, private equity funds do not require protection from entrenched managers. On the other hand, poor investor protection and law enforcement could also turn out to be costly for the private equity investor when dealing with other stakeholders, such as creditors and employees. Furthermore the pursuit of private equity to maximize the equity value of the firm might come at the expense of creditors. Hence a higher degree of creditor protection might be a disadvantage to private equity funds. It is therefore unclear whether value gains through private equity involvement will be larger or smaller in civil law countries.

The role of other stakeholders such as employees will largely depend on the level of employment protection, which differs substantially across countries. In a different classification of corporate governance systems, Pagano and Volpin (2005) argue that political theory—rather than legal origins—explains international differences in regulation. The authors develop a model that deals with

political preferences concerning two sets of laws: company law (i.e., shareholder protection) and labor law (i.e., employee protection). As a result of this model, the authors suggest that the outcome of the political process hinges crucially on the electoral system. Pagano and Volpin predict that in countries in which the electoral system puts a stronger emphasis on the proportional election rule (e.g., Austria, Ireland, Italy, and Scandinavian countries), shareholder protection will be weak and employment protection strong. Under a majoritarian system (which is present in countries such as Canada, Japan, the United Kingdom, and the United States) the consequences are reversed (i.e., strong shareholder protection and weak employment protection).

In addition to the classification into common law and civil law countries and Pagano and Volpin's (2005) classification based on electoral systems, several other taxonomies (e.g., Hall and Soskice's 2001 varieties of capitalism approach or the classification of bank-based vs. market-based economies, which goes back to Hicks 1969) classify countries into different categories based on differences in their corporate governance structures. All these taxonomies point out that different countries exhibit substantial differences in their institutional environments and their corporate governance settings.

Based on these observations, two critical questions emerge: How do these institutional factors influence the activity and profitability of private equity investments across different countries? Do private equity firms adjust their investment strategies to these institutional factors? In the following we discuss these issues in detail with the help of empirical research papers.

Buyout Strategies in Different Institutional Environments

This section reviews extant evidence on buyout strategies and sources of wealth creation in different geographies: the United States and the United Kingdom, Continental Europe, Australia, Japan, and emerging markets (see Table 23.1 for an overview).

Cross-Regional Evidence

There are several cross-country studies that investigate how institutional and legal factors affect the activity of private equity funds. Groh et al. (2010) analyze fundraising activities of private equity and venture capital funds in twenty-seven European countries (EU-25 plus Switzerland and Norway). Based on the

Table 23.1 Summary of Related Research on Buyouts around the World

Author	Sample Description	Data Source	Method of Analysis	Summary of Findings
Cross-Regional Evidence				
Lerner and Schoar (2005)	210 developing country private equity transactions between 1987 and 2003	Survey	OLS regressions with dummies for contracting features as dependent variable	Private equity funds employ complex and contingent contracts in countries with high legal enforcement. Returns are larger in high-enforcement environments.
Cao et al. (2010)	844 global LBO transactions from 1995 to 2007	DEALOGIC	Probit regression analysis for the LBO likelihood using strategic takeovers as a control group and OLS of takeover premiums	The likelihood of an LBO transaction and the size of LBO premiums are positively related to the degree of investor protection.
Groh et al. (2010)	Fundraising volumes in 27 European countries	European Private Equity & Venture Capital Association yearbooks	Construction of attractiveness index for private equity and venture capital using rescaling, factor analysis, and geometric aggregation	The U.K. is the most attractive country for private equity fundraising activities, followed by Ireland, Denmark, Sweden, and Norway, driven by investor protection and corporate governance rules as well as the size and capital markets liquidity.
U.S. and U.K. Evidence				
DeAngelo et al. (1984)	81 going-private transactions in 1973–1980 in the U.S.	*Wall Street Journal*	Event study	In the two days surrounding the announcement of the deal the target shareholders receive a 22.27% cumulative average abnormal return. The average premiums in going-private transactions sum up to 56%.
Lehn and Poulsen (1989)	263 successful going-private transactions from 1980 to 1987 in the U.S.	Wall Street Journal Index	Logit regression analysis with matched-firm approach and OLS regressions	Undistributed cash flows explain the likelihood of firms being taken private and explain the premiums paid in such transactions.

(*continued*)

Table 23.1 (continued)

Author	Sample Description	Data Source	Method of Analysis	Summary of Findings
Kaplan (1989)	48 buyouts of publicly listed companies with postbuyout data announced between 1979 and 1985 and completed between 1980 and 1986 in the U.S.	W. T. Grimm's *Mergerstat Review* and *Wall Street Journal*	Comparison of median changes compared to industry peers	Buyout firms experience an increase in operating income (before depreciation) and net cash flow and reductions in capital expenditures in the first three postbuyout years. No wealth transfer from employees to shareholders detected.
Marais et al. (1989)	290 buyout proposals from 1974 to 1985 in U.S. markets	Dow Jones News Retrieval Service and *Wall Street Journal*	Index model regressions	Public convertible securities and nonconvertible preferred stock react significantly positively upon the announcement of going-private proposals.
Smith (1990)	58 completed MBOs of publicly held companies between 1977 and 1986 in U.S. markets	Sample from Marais et al. (1989), W. T. Grimm's *Mergerstat Review*, and Compustat Industrial Research file	Comparison of median changes compared to industry peers	Operating cash flows per employee and per dollar of operating assets increase significantly from the year before to the year after the buyouts. Effect is not driven by layoffs or reductions in capital expenditures.
Opler and Titman (1993)	180 LBOs from 1980 to 1990 in the U.S.	ADP M&A database, Wall Street Journal Index, Standard & Poor's News, and Dow Jones Broad Tape	Logistic regression analysis	LBOs have a combination of low growth opportunities and high free cash flows, supporting the FCF hypothesis.
Travlos and Cornett (1993)	56 going-private transactions from 1975 to 1983 in U.S. markets	Wall Street Journal Index	Event study and OLS regressions	Significant average abnormal return of 8% on the announcement day of going-private bids. Abnormal returns are driven by shareholders' servicing costs, capital structure changes, and reduction of agency costs.

Warga and Welch (1993)	43 bonds issued by firms involved in a LBO from 1985 to 1989 in the U.S.	Goldman Sachs and Lehman Brothers	Event study and cross-sectional regression	Significant wealth losses of about 6% for bondholders after LBO announcements.
Servaes (1994)	inter alia, 99 going-private transactions from 1974 to 1986 in the U.S.	*Wall Street Journal*	Comparison of mean and median changes compared to industry peers	Going-private targets do not invest more than firms operating in the same industry.
Kieschnick (1998)	263 successful going-private transactions from 1980 to 1987 in the U.S.	Wall Street Journal Index	Weighted logistic regression (weighted maximum likelihood estimators)	FCFs do not explain the likelihood of firms being taken private.
Van der Gucht and Moore (1998)	343 LBOs from 1980 to 1992 in the U.S.	Securities Data Corporation (SDC)	Event study and hazard model	Highly significant cumulative abnormal returns (CARs) of 15.6% in the three days surrounding the announcement of the LBO. Hazard model reveals that not all LBO firms will eventually be listed on stock markets again. For some firms it seems to be beneficial to keep the private status.
Halpern et al. (1999)	126 completed going-private transactions with over 50% debt financing (LBOs) from 1981 to 1986 in the U.S.	*Mergers & Acquisitions* (journal), W. T. Grimm's *Mergerstat Review*, and Wall Street Journal Index	Multinomial logistic regressions (temporal matching with random sampling)	LBO targets either exhibit relatively low or relatively high managerial ownership before the transaction (heterogeneity hypothesis). Tax expenditures and bad stock performance (not free cash flow) before the buyout drives the going-private decision.
Weir et al. (2005a)	95 PTP transactions in the U.K. from 1998 to 2000	*Acquisitions Monthly*, the Centre for Management Buyout Quarterly Review, the *Financial Times,* and Extel Company News	Logistic regression analysis (matching by size and industry)	PTPs in the U.K. exhibit higher institutional ownership, higher CEO shareholdings, and lower Q ratios. No significant impact of FCFs on going-private decision.

(*continued*)

Table 23.1 (continued)

Author	Sample Description	Data Source	Method of Analysis	Summary of Findings
Weir et al. (2005b)	95 PTP transactions in the U.K. from 1998 to 2000	Centre for Management Buyout Research	Logistic regression analysis (matching by size and industry)	The main drivers for a going-private decision in the U.K. are a poor stock price performance and high board and institutional ownership prior to the buyout. No significant impact of FCFs, tax payments, and growth opportunities on going-private decision.
Amess and Wright (2007)	533 LBO transactions in the U.K. from 1993 to 2004	Centre for Management Buyout Research	GMM in systems, logistic regression models	LBOs neither create nor destroy jobs.
Renneboog et al. (2007)	177 U.K. going-private transactions completed between 1997 and 2003	Centre for Management Buyout Research	Event study, premiums analysis, and cross-sectional regression analysis	Shareholders earn about 23% cumulative average abnormal returns in a 2-day window around the announcement. The premiums paid to shareholders amount to 40%. The three main drivers of the wealth gains are undervaluation of the target firms before the announcement, increased interest tax shields, and the realignment of interest between owners and managers.
Sudarsanam (2007)	236 completed U.K. going-private transactions from 1995 to 2005	Thomson Financial's SDC database and the Centre for Management Buyout Research database	Fama and French (1983) 3-factor event study, logistic regressions (matching by industry and size)	PTP firms have higher default probability, poorer operating performance, lower stock market valuation, and lower growth opportunities. Shareholders earn about 18% cumulative average abnormal returns in a 21-day window around the announcement.
Amess et al. (2008)	232 LBO transactions in the U.K. from 1996 to 2006	Centre for Management Buyout Research	Multinomial probit regressions	No significant impact of PE-backed LBOs on either employment or wages.
Weir et al. (2008)	115 PTP transactions in the U.K. from 1998 to 2001	Centre for Management Buyout Research	Logistic regression analysis (temporal matching with random sampling)	Financial distress costs are not the main driver in the going-private decision in the U.K. PTP targets are relatively smaller, younger, and exhibit a weak stock performance before the transaction.

Continental European Evidence				
Desbrières and Schatt (2002)	161 French LBOs completed between 1988 and 1994	Diane CD-ROM	Parametric and nonparametric tests of differences in performance between LBO targets and industry competitors	French targets are considerably smaller compared to LBO targets in the U.S. They also have more concentrated ownership structures (many family businesses). Acquired firms show poor performance (return on equity, return on investment, margin ratios) compared to their industry competitors. Debt levels increase and liquidity decreases.
Betzer (2006)	73 LBOs from 1996 to 2002 in Europe	Bloomberg, Reuters, and *Wall Street Journal Europe*	OLS regression of LBO takeover premiums	Significant differences in premiums in U.K. (44%) and Continental Europe (18.2%). Cross-sectional analysis reveals that bidders seem to target firms with poor stock price performance (undervaluation). Premiums are also found to be significantly higher when multiple bidders are present. PE firms pay significantly more for companies with scattered shareholdings.
Andres et al. (2007)	115 European LBOs from 1997 to 2005	Bloomberg, Reuters, and *Wall Street Journal Europe*	Event study and cross-sectional OLS regressions	Significant announcement returns of 13.6% for pre-LBO shareholders (in 3-day event window). Targets with dispersed ownership and undervalued firms are associated with higher announcement returns.
Cumming and Zambelli (2010)	103 Italian LBO targets acquired during 1999–2006	Manually collected survey data from members of the Italian Venture Capital and Private Equity Association	OLS, logit, and tobit regression models to analyze the effects of regulation on the structure of buyout transactions and the governance of target firms	Legality of LBOs in Italy was highly questionable before January 2004. Buyout investments increase substantially once legal certainty is established. Investors become more involved in the management and governance of the target firm.

(*continued*)

Table 23.1 (continued)

Author	Sample Description	Data Source	Method of Analysis	Summary of Findings
Achleitner et al. (2011)	48 acquisitions of private equity investors in Germany in 1998–2007	Merger Market, Reuters	Standard event study (including comparison between PE and non-PE share purchases), cross-sectional OLS regression, and bootstrap robustness tests	Significant announcement returns of 8.82 % (in a 3-day event period). CARs for PE investments are considerably higher than announcement returns of non-PE shareholders (3.10% over the same interval). Wealth effects of PE investor are positively related to the target's tax liabilities and degree of undervaluation and negatively related to the target's leverage. CARs are significantly lower if a second large shareholder is present.
Australian Evidence				
Eddey et al. (1996)	46 Australian going-private transactions between 1988 and 1991	Corporate Adviser database, *Australian Financial Review*	Logistic regression analysis using matched sample, OLS regression of premiums	Australian going-private transactions are not driven by free cash flow problems. There is a high frequency of takeover threats prior to going private.
Japanese Evidence				
Wright et al. (2003)	71 buyouts in Japan between 1998 and 2001	Survey, face-to-face-interviews	Qualitative	Dominant buyout type is spin-off of underperforming affiliate firm of a larger business group.
Evidence on Emerging Markets				
Ribeiro and Carvalho (2008)	65 private equity and venture capital organizations in Brazil between 1999 and 2004	Survey	Qualitative	Brazilian activities are concentrated in the venture capital industry and only a few LBOs take place.

observation that the geographical source of funds is close to its demand, they relate the magnitude of fundraising to a composite index of various factors that have been suggested by the literature: economic activity, capital market depth, investor protection and corporate governance, taxes, human and social environment, and entrepreneurship. Investor protection and corporate governance are measured by indices for the extent of disclosure, director liability, and the shareholder suits index, which measures the ability to sue officers and directors for misconduct. They find that the United Kingdom is the most attractive country in this regard, followed by Ireland, Denmark, Sweden, and Norway. The attractiveness of the United Kingdom is driven by investor protection and corporate governance rules as well as the size and liquidity of its capital market as a proxy for financial professionalism, deal flow, and exit opportunities.

Cao et al. (2010) conducted the first global study on LBOs. Based on a data set of 844 global LBO transactions from 1995 to 2007, they analyze how the institutional environment affects the likelihood of LBOs and the size of LBO premiums. They employ the measures developed by La Porta et al. (1998) to proxy investor protection: antidirector rights, accounting standard, contracting rights, and creditor right indices. Cao et al. estimate a probit model to analyze how the likelihood of an LBO depends on institutional factors and target characteristics. Using strategic takeovers as a control group, they are able to disentangle the effect of the explanatory variables on takeovers in general from the effects on leveraged transactions in particular. The likelihood of a takeover to be an LBO increases with the factors of antidirector rights and U.K. legal origin. Larger targets with low growth perspectives are more likely to undergo an LBO, which is consistent with Jensen's (1986) FCF theory.

To shed light on the cross-sectional determinants of LBO premiums, Cao et al. (2010) regress LBO premiums on target characteristics and features of the institutional environment. Premiums significantly increase with the strength of antidirector rights and decrease with creditor rights. A high degree of investor protection not only makes LBOs more likely, but it also increases the shareholder gains to be made from such a transaction. This ensures that the target's minority shareholders benefit from LBOs. The inverse and significant impact of creditor rights indicates that target shareholders might benefit from a redistribution of wealth from debt holders to shareholders. In sum, Cao et al. establish that investor protection is conducive for LBOs to act as a governance instrument. Apparently private equity funds do not substitute for a lack of investor protection. In contrast, they require investor protection to pursue their governance-improving strategies.

Lerner and Schoar (2005) focus on the degree of legal enforcement and the resulting possibility of writing contingent contracts as a potential concrete channel over which the institutional environment affects private equity transactions. They analyze a data set of contractual arrangements of 210 private equity transactions in developing countries.

They find that the contractual arrangements vary with the countries' legal enforcement, measured directly or indirectly by legal origin (British, French, or socialist origin). In high-enforcement countries, private equity funds employ

complex and contingent contracts such as convertible preferred stock with covenants, while they use common stock and straight debt in countries with low legal enforcement. Such contingent contracts allow for the separation of cash flow and control rights. In low-enforcement countries, apparently these complex and contingent contracts cannot be used and, hence private equity funds have to rely on majority ownership instead. The degree of the enforcement of the legal system thereby limits the ability to diversify. This limit is costly, because private equity funds have to purchase larger stakes in low-enforcement countries. Lerner and Schoar (2005) also find that the returns to private equity investments are higher in high-enforcement countries, which they interpret as suggestive of the effect that private equity investment outcomes are better in high-enforcement countries, that is, when investors can use contingent contracting. Ownership may thus be only a partial substitute for a lack of contingent contracting.

U.S. and U.K. Evidence

In this section we review the empirical evidence of the role of private equity funds in the Anglo-Saxon capital markets of the United States and the United Kingdom. The institutional settings of both markets, such as a developed debt market and a more favorable legal environment compared to the rest of the world, have backed the dominant role of the United States and the United Kingdom in the first leveraged buyout wave of the 1980s. Therefore the vast majority of the overall empirical evidence on both the first (1980s) and the second (1990s and 2000s) waves on buyouts comes from those markets.

We try to give a broad overview of private equity activity in the United States and the United Kingdom related to the three main research questions raised in the introduction: What is the effect of private equity–backed buyouts on firm performance and firm value? How does the market assess the drivers of these potential performance and value changes that will shed light on the investment strategies of private equity funds? What are the main rationales of private equity funds in their decision to acquire target companies?

With regard to the first question, the literature on the value effects of buyouts has mainly focused on performance measures related to accounting and to stock price performance. A very detailed review of the effect of private equity on firm performance and value is available in Wright et al. (2009). Empirical findings related to share price performance document positive share price reactions after the public announcement of buyouts. The excess return to shareholders caused by the announcement of these transactions lies in a range of 12 to 22 percent on the first day after the announcement. (For evidence on positive abnormal returns in U.S. and U.K. buyout transactions see, e.g., DeAngelo et al. 1984, United States; Lehn and Poulsen 1989, United States; Marais et al. 1989, United States; Travlos and Cornett 1993, United States; van der Gucht and Moore 1998, United States; Renneboog et al.

2007, United Kingdom.) Empirical findings related to accounting performance show an increase in cash flow performance in the postbuyout period. (For evidence on positive accounting performance in U.S. and U.K. buyout transactions see, e.g., Kaplan 1989, United States; Smith 1990, United States.) Hence all studies agree on the fact that buyouts lead to increased firm performance and increased shareholder value in the United States and the United Kingdom. Furthermore Renneboog et al. find that the magnitude of the value creation reported in the studies of the first wave of buyouts has been sustained in the second wave.

We address the second and third questions by reviewing the main empirical studies that investigate the determinants of shareholder gains and the particular characteristics of buyout targets. Here we focus on the following six value drivers, which are the focus of most studies investigating the effect and investment strategies of private equity funds: ownership and incentive alignment, FCF, debt tax shield, financial distress costs, undervaluation, and wealth transfer from employees.

Private equity funds may be an adequate corporate governance mechanism that mitigates the potential agency conflict between management and outside shareholders in large corporations with an atomistic shareholder structure. As most U.S. and U.K. firms exhibit a diffuse ownership structure, the reunification of ownership and control by private equity funds may in certain circumstances increase shareholder value, according to the incentive realignment hypothesis. Halpern et al. (1999) find empirical support for the incentive realignment hypothesis in the United States, as one of their main findings shows that PTP transactions are more likely for companies that exhibit either relatively low or relatively high managerial ownership. Weir et al. (2005a), Sudarsanam et al. (2007), and Renneboog et al. (2007) also find evidence in favor of the incentive realignment hypothesis in the United Kingdom. Weir et al. find that the likelihood of a PTP transaction increases in the ownership stake of the CEO and in the ownership stake of institutional blockholders. Sudarsanam et al. confirm this finding, as they show that PTP transactions are more likely for firms with large managerial ownership. In addition Renneboog et al. document that the magnitude of the market reaction following the announcement of PTP transactions is larger for firms that exhibit low managerial ownership. This evidence supports the notion that private equity investors realign incentives in target companies in Anglo-Saxon markets, where ownership of public firms is predominantly diffused.

In companies with a scattered shareholding structure, the FCF problem described by Jensen (1986) might be severe and private equity funds as corporate control agents might resolve this issue. Empirical evidence investigating the FCF theory in the context of private equity–backed buyouts in the United States is mixed. Lehn and Poulsen (1989) and Opler and Titman (1993) show results consistent with the FCF hypothesis. However, Opler and Titman find empirical evidence that the level of FCF does not itself determine the likelihood of a firm going private, but the combination of unfavorable growth opportunities and high FCF. Servaes (1994), Kieschnick (1998), and Halpern et al. (1999) do not confirm Jensen's FCF hypothesis in the U.S. market. In the U.K. market, neither Weir et al. (2005a)

nor Renneboog et al. (2007) find the firm's FCF to be a significant value driver of PTP transactions. In sum, there is some evidence that private equity funds' investment strategies seem to be influenced by the target's FCF in the U.S. market, but no such evidence exists for the United Kingdom.

In the United States and the United Kingdom leveraging the capital structure may increase firm value through the tax deductibility of interest payments. Therefore private equity funds may target firms with high levels of tax liabilities. In the United States the evidence is at best mixed. The early studies by Lowenstein (1985) and Kaplan (1989) show that tax benefits are important determinants of the private equity investor's strategy in taking firms private. Furthermore Halpern et al. (1999) document that higher tax expenditures increase the likelihood of an LBO. However, Lehn and Poulsen (1989) and Kieschnick (1998) find no significant influence of tax liabilities on the odds of going private. Weir et al. (2005a) and Renneboog et al. (2007) investigate the influence of tax advantages in the United Kingdom. Both studies find that tax payments neither have an impact on the decision of a private equity investor to take a company private, nor do they influence the magnitude of the share price reaction after the PTP announcement. Weir et al. and Renneboog et al. explain the fact that we find some evidence related to the tax benefit hypothesis in the United States but no evidence in the United Kingdom by referring to Dicker (1990), who shows that the tax benefits of financing firms with debt are higher in the United States compared to the United Kingdom.

Private equity funds may avoid investing in firms that suffer from potential financial distress costs. Opler and Titman (1993) provide evidence for the U.S. PTP market and support this hypothesis, as they find that their proxy for distress costs, namely R&D expenditures, is significantly negatively correlated with the odds of becoming a PTP target. Weir et al. (2008) show that Opler and Titman's finding does not hold in the institutional context of the United Kingdom, where the bankruptcy process is contract-based, as opposed to the U.S. bankruptcy process, which is court-based. They do not find that PTP targets have lower R&D expenditures. Financial distress costs seem to play a minor role in the United Kingdom compared to the United States. In order to explain their contrarian finding in the United Kingdom Weir et al. (2008, 17) argue "that the UK system is more effective at either preventing or avoiding financial distress because any individual creditor can set the distress resolution process in motion." However, Sudarsanam et al. (2007), using option pricing models to obtain direct measures of financial distress, find that private equity investment strategies are influenced by financial distress costs in the United Kingdom. The authors argue "that firms experiencing financial distress or potential bankruptcy before the PTP may be attractive to private equity funds who specialise in turning around underperforming firms" (9).

A company whose stock trades below its intrinsic value is an attractive target for private equity funds. This undervaluation of small target firms can be rationalized by a potential disregard of financial analysts. Studies by Halpern et al. (1999) and Weir et al. (2005b) consistently find that private equity funds target companies

whose stock price performance deteriorated in the period before the buyout in the United States and the United Kingdom. Furthermore Renneboog et al. (2007) show that the weak prior stock price performance of target firms is a significant value driver of U.K. PTP transactions.

The implementation of organizational changes is an integral part of the strategy of private equity funds. After an extensive screening of the potential target, private equity funds have gained knowledge of the number of employees required to increase the value of the business. Therefore private equity funds may realize higher wealth gains in companies where layoffs are implemented and staff costs are thence significantly reduced. According to the WEF (2008, ix) report, "employment declines more rapidly in target establishments than in control establishments in the wake of private equity transactions" in U.S. markets. However, the report also states "that the job losses at target establishments in the wake of private equity transactions are partly offset by substantially larger job gains in the form of greenfield job creation by target firms" (ix). Amess and Wright (2007) and Amess et al. (2008) provide empirical evidence supporting Wright et al.'s (2009, 365) claim that private equity–backed buyouts "do not have significantly different levels of employment compared with control firms" in the United Kingdom.

The question of shareholder wealth increases being driven by debt holder expropriation is addressed by Warga and Welch (1993) for the U.S. market. They find that the announcement of LBOs leads to bondholder losses and that the severity of losses is weakly linked to the size of LBO shareholder gains. However, their findings do not support the assertion that redistributions from bondholders are a major source of the shareholder gains.

Overall the institutional differences between the United Kingdom and the United States have an impact on the investment strategies of private equity funds in both countries. In particular the different findings related to the debt tax shield and the financial distress costs provide evidence that investment strategies in both countries are largely determined by the specific institutional setting.

Continental European Evidence

In contrast to the Anglo-Saxon markets of the United States and the United Kingdom, the number of empirical research papers on the effects of private equity investments in Continental European markets is rather limited. This can primarily be explained by a substantial lag in the development of a Continental European buyout market compared to the Anglo-Saxon world. Until the late 1990s a public buyout market was virtually nonexistent in Continental Europe, but it saw tremendous growth in the late 1990s and early 2000s. Compared to the United States, the European market is heterogeneous with regard to capital market culture, legal framework, and corporate governance standards and therefore represents an interesting research environment despite its smaller size.

In line with the empirical evidence presented above, shareholders of European companies experience significant wealth gains after the public announcement of buyouts. In the first cross-European study, Andres et al. (2007) find positive and highly significant LBO announcement returns of 24.2 percent, a figure roughly comparable to U.S. evidence. It should be noted, though, that their sample comprises a large number of U.K.-based buyouts and that the authors do not present event study results for their U.K. and Continental European subsamples separately. In a closely related study, Betzer (2006) analyzes premiums paid in European LBO transactions. He finds the average premium to be 36.2 percent and shows that these premiums differ substantially between the United Kingdom and Continental Europe. On average premiums in the United Kingdom amount to 44.0 percent, while the average premium of Continental European buyouts is 18.2 percent. Compared to the results of Cao et al. (2010; see Figure 23.1 in this chapter), the premiums observed by Betzer (2006) are much lower, in particular in the United Kingdom. A possible explanation is the high percentage of buyouts in the mid- to late 1990s in Betzer's U.K. sample, a period in which LBO premiums were comparatively high in the United Kingdom. The finding of higher premiums in the United Kingdom stands in contrast to higher wealth gains in civil law countries due to weak protection of minority shareholders, a conjecture that can be derived from La Porta et al.'s (1998) observations. In another study on the announcement effects of private equity investments in listed companies, Achleitner et al. (2011) find comparatively low announcement period returns of 15.0 percent for a sample of German companies. This corroborates Betzer's (2006) findings of lower premiums in Continental European civil law countries. This suggests that the expropriation of wealth from minority investors does not present a major source of buyout gains. If this were the case, we would observe higher premiums in environments with low minority protection, which is typically the case for civil law countries.

With respect to the determinants of shareholder gains in the Continental European market, these studies present persuasive evidence for the influence of differences in corporate governance. Andres et al. (2007) find a significantly higher stock price reaction for companies with scattered shareholdings and consequently a greater potential for reduced agency costs due to closer monitoring. This result is in line with Betzer (2006), who reports significantly higher premiums for companies with atomistic shareholder structures and therefore weak monitoring of management. Findings by Achleitner et al. (2011) provide strong support for these results. In their analysis of private equity investments on the German stock market, the authors find a negative relationship between the ownership stake of the largest shareholder (prior to the private equity investment) and announcement returns. In sum, these findings indicate that ownership characteristics are an important determinant of wealth gains in buyouts in the Continental European market. In line with the argument that the power of minority shareholders to effectively control management is rather small in these countries, wealth gains seem to be a direct result of the intensity of monitoring prior to the buyout. In firms in which internal governance is already good due to the presence of a large

and powerful shareholder, wealth gains are limited. In the case of scattered shareholdings and a large degree of managerial freedom, private equity involvement seems to act as a substitute corporate governance mechanism.

Regarding the FCF theory, papers on Continental European markets do not find support for the hypothesis that the level of FCF has an influence on investment strategies of private equity funds. In addition evidence on the influence of potential tax savings due to the tax deductibility of interest payments is mixed. Achleitner et al. (2011) find support for the notion that tax benefits are a significant determinant of the private equity investor's strategy in Germany, while Betzer (2006) finds no significant relationship between potential tax savings and premiums in Continental European buyouts. Despite conflicting evidence regarding these two hypotheses, all studies confirm a significantly negative relationship between announcement returns (and premiums) and prior stock market performance. This finding is in line with U.S. and U.K. evidence by Halpern et al. (1999) and Weir et al. (2005b), who report that private equity funds target firms with poor share price performance in the period before the buyout. Furthermore results by Betzer (2006) show no support for the hypothesis that value in PTP transactions is created at the expense of employees. This is also in line with Pagano and Volpin's (2005) model of electoral systems, which implies that employees are well protected in most Continental European countries.

Desbrières and Schatt (2002) analyze the specific features of French companies that are involved in a LBO transaction. The authors document a higher concentration of shareholdings before the buyout and much lower levels of debt financing compared to buyouts in the United States and the United Kingdom. The first finding is directly related to the question of how buyouts are conducted and which firms get involved in buyout transactions. In the French market LBOs are primarily used to facilitate the transfer of family businesses, which implies that "typical" PTP transactions are hardly present. Related to the evidence on other Continental European markets, their findings confirm that buyouts in these (civil law) countries are characterized by high levels of ownership concentration. As pointed out above, value gains through the mitigation of agency problems between managers and shareholders seem to be of minor importance in Continental Europe.

In an interesting case study of the effect of different legal regimes, Cumming and Zambelli (2010) examine the effect of regulatory changes on the structure and governance of LBOs in the Italian market. In Italy LBOs have experienced a period of legal uncertainty and even prohibition (prior to October 2001), until they were gradually legalized in 2004. Cumming and Zambelli analyze this transition process empirically with the help of a detailed data set on the deal structure and organization of LBOs over the period 1999–2006. Using logit regressions, they find that the likelihood of a buyout investment increases significantly once legal certainty is established. In addition the analysis shows that private equity funds increase their equity stake in target firms substantially and become more involved in the governance of their targets after the LBO process is fully legalized. The authors interpret these findings as evidence of less efficiently structured LBOs and an overall

less active buyout market that diminishes the incentives for private equity funds to become actively involved in the governance of their target firms as long as legal uncertainty prevails. This is in line with the view of La Porta et al. (1998) that legal certainty and strong investor protection are important determinants of the development of financial markets.

In sum, the empirical studies presented in this section provide support for the notion that different institutional settings have a strong impact on private equity activity and on the investment strategies pursued by private equity funds. In particular, findings related to differences in ownership concentration of listed companies indicate that the institutional environment largely determines investment strategies and potential value gains in Continental Europe, whereas the FCF motive does not seem to drive LBOs in Europe.

Australian Evidence

Australia presents an interesting environment in which to study LBOs because on the one hand it has an Anglo-Saxon tradition but on the other hand it has characteristics that are different from those in the United States (Eddey et al. 1996). First, the protection of minority shareholders is weaker than in the United States because shareholders do not enjoy veto rights in takeover decisions. They only have a right to independent expert advice when deciding whether to accept or reject the offer. The shareholders' ability to appeal to courts if they question the fairness of the offer is reduced due to high litigation costs and the unavailability of class action. Second, listed low-growth firms, which represent the typical LBO targets, are underrepresented in the Australian market because they are usually foreign-owned and nonlisted. Third, widely held public debt is relatively uncommon in Australia. Borrowings are with individual or syndicated lenders. Those debt holders are expected to monitor firms relatively closely. Therefore the ability of private equity funds to create shareholder value by transferring wealth from creditors is likely to be limited.

Eddey et al. (1996) investigate forty-six Australian going-private transactions between 1988 and 1991. They analyze transaction motives by comparing targets with an industry- and size-matched control sample. Takeover threats in the twelve months preceding the going-private announcement significantly increase the likelihood of being taken private. However, being subject to takeover threats (both rumored and announced) is also likely to be endogenous to agency costs or undervaluation. A large number of prior offers may reflect concerns about the abuse of FCF or information asymmetries between managers and investors. Eddey et al. cannot support the FCF motive for going private transactions.

Eddey et al. (1996) argue that the FCF explanation might not be applicable to Pacific Basin countries, where listed firms are usually growth firms and sectors

where managerial abuse of FCF is likely to occur are mostly private and foreign-owned. The authors find that private equity funds target small firms. This may indicate that LBOs in Australia may be driven by information asymmetries between managers and investors rather than FCF problems.

Eddey et al. (1996) also investigate the cross-sectional determinants of LBO premiums. They find that premiums increase with the existence of prior takeover threats. In the presence of competing bids, private equity funds are forced to make more attractive offers. Moreover premiums are positively associated with the degree of ownership fragmentation. Apparently premiums must be higher in order to encourage diffuse shareholders to sell their shares rather than actively opposing the bid. This observation suggests that the weaker shareholder protection in Australia as compared to the United States does not result in the expropriation of minority investors. Furthermore this finding may indicate that LBOs may improve monitoring that is likely to be weak if ownership is diffuse. Again the authors do not find that FCF problems drive shareholder gains of LBO transactions. Thus the FCF theory does not seem to be a generic explanation for going-private transactions.

Japanese Evidence

Wright et al. (2003) are the first to examine the development of the buyout market in Japan. Japan is a developed market that is similar to Germany in that firms are strongly bank-oriented. The *keiretsu* structure, in which almost all firms have close links with a main bank and extensive ties with their suppliers and distributors, presents the most notable feature of the Japanese market. Financing can be obtained from sources within the keiretsu, as many of them have an own bank that usually does not assume an active monitoring role. Moreover both keiretsus and other large diversified firms often lack performance measures and use bureaucracy as a main control mechanism. As a consequence they are likely to exhibit governance and incentive problems. In principal the Japanese market offers great potential to pursue corporate governance-improving strategies. However, the high indebtedness of Japanese firms might pose an obstacle to employing leverage increases to reduce FCF abuse and discipline managers. A further difficulty is likely to be imposed by the managerial culture in Japan, which is more relationship- than performance-oriented and follows rather informal and non-rule-based approaches.

Wright et al. (2003) use surveys and face-to-face interviews among private equity funds to study seventy-one Japanese buyouts between 1998 and 2001. They find that the dominant buyout target is an underperforming affiliate firm of a larger business group that the group would like to spin off. According to the survey, the management's growth opportunities are typically frustrated by bureaucratic internal control systems. This buyout type makes up 85 percent of transactions. According to their survey, the main buyout motive is restructuring. In

the majority of cases buyout funds implement monthly financial reporting and effect asset disposals, which indicates that the buyout funds pursue governance-improving strategies. Apparently buyouts help overcome the rather conservative governance inherent in the Japanese main bank system.

However, the widespread form of buyouts in Western markets, where private equity funds take a public firm private accompanied with high leverage and a focus on efficiency gains, seems to be less prevalent in the Japanese market. Only a few buyouts involve the restructuring of the keiretsu groups. Instead buyout funds in Japan help to revitalize divisions that are better run independently rather than being part of a large business group. Wright et al. (2003) observe that this is not likely to change quickly because there are no strong indicators that the Japanese corporate governance system converges to the shareholder-centric variant.

Evidence on Emerging Markets

The LBO model is still in its infancy in many emerging markets. Only single cases of transactions are observable. The literature is still on a rather qualitative level (see Charvel 2007 for Mexico and Bo 2009 for China). Empirical studies on private equity in emerging markets in general and buyouts in particular are very scarce. Based on survey data, Ribeiro and Carvalho (2008) study how the private equity/venture capital (PE/VC) model adapts to the institutional environment in Brazil. Brazil is one of the leading countries in Latin America and provides an interesting setting in which to study the evolution of private equity: on the one hand it is an emerging country, but on the other hand it has more than two decades of experience with private equity.

Ribeiro and Carvalho (2008) collected a full census data set from sixty-five PE/VC organizations in Brazil. The organizations active in the Brazilian market focus their investments on a broad variety of industrial sectors rather than specializing in certain sectors, which indicates that the market is yet in its early development stage. Furthermore they find that activities are concentrated in venture capital and only very few LBOs take place. Typical later-stage buyouts account for only 5.7 percent of the portfolio companies. They attribute the underdevelopment of the LBO market to the very limited access to debt financing. As an additional source of underdevelopment, they mention inefficiencies in the Brazilian judiciary, which lead to the forced use of arbitration to settle disputes. The Brazilian example illustrates that buyout funds need a certain degree of legal enforcement and availability of debt financing to employ this financial technology. The LBO market in emerging countries is contingent on the successful implementation of investor protection provisions, law enforcement, bureaucracy reductions, and liquid capital markets.

Concluding Remarks

This chapter investigates international buyout activity, which previously has been only an Anglo-Saxon phenomenon. The review of empirical studies on buyouts in different institutional contexts leads us to the following conclusions: In regions where the institutional setting has become more favorable for buyout transactions, such as Continental Europe, buyout activity has substantially increased. In emerging markets a buyout market has not yet evolved, due to the instability of institutions and the lack of legal enforcement. The legal environment in the respective regions has a significant impact on the profitability of buyout transactions. Countries where minority shareholder protection is high, according to the La Porta et al. (1998) framework, such as the United States, Canada, and Sweden, exhibit higher premiums paid by private equity funds compared to countries such as Germany and Italy, where minority shareholder protection is relatively low. These observations suggest that the buyouts cannot substitute for institutional deficiencies. Quite the reverse: LBOs require an institutional environment with strong legal enforcement and strong investor protection. Private equity funds apparently adapt their investment strategies to the institutional setting in their respective countries. In their home countries, buyouts aim at solving problems of FCF abuse and deficient incentive alignments. In countries where capital markets are less deep and minority protection is weaker, they solve monitoring inefficiencies in firms with disperse ownership structures.

Even though a large number of research papers have examined the functioning and consequences of buyouts, this chapter has shown that most of these studies are focused on the U.S. and U.K. markets, and therefore the Anglo-Saxon world. Far less is knows about LBO activity in other capital markets. This implies that the question of whether PE investors—who are mostly large Anglo-Saxon funds—can simply transfer their business model to other markets still remains unanswered. Closely related to this issue is the question of to what degree adjustments to different institutional environments are necessary, and, if this is the case, what these adjustments imply for the profitability and success of LBOs. On the fund level, future research should also examine whether the extent to which value is added by buyouts differs among countries, and whether these differences are due to the institutional environment or the buyout manager's skills.

Another issue that requires further research is the effect that buyouts have on employment in target firms. Since LBO targets usually leave public markets and are therefore no longer subject to stringent disclosure requirements, data on levels of employment and compensation in target firms are not readily available. However, given the recent criticism of the business model of largely unregulated investors like PE funds in many (in particular less marked-oriented) economies, independent and systematic research of this question is necessary.

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CHAPTER 24

LEVERAGED BUYOUTS AND CONTROL-ORIENTED INVESTMENTS IN ASIA

GRANT FLEMING AND MAI TAKEUCHI

The internationalization of leveraged buyout (LBO) activity has resulted in the transmission of investment practices and financial technology to new private equity markets around the world. The growth dynamics of Asian economies has attracted substantial institutional capital into private companies and resulted in rapid growth of LBO, growth capital, and venture markets.[1] LBOs are a viable option for Asian management teams in corporate restructuring, and public-to-privates have been a feature of the Asian market for corporate control. In addition growth capital has played a role in financing founders and entrepreneurs in their strategic development into new markets and products. Private equity professionals in the growth equity sector play an active role as minority equity owners alongside founders and/or management teams.

Asian LBOs and growth capital markets have been less well documented in academic research. Two comprehensive reviews of literature on LBOs illustrate the relative dearth of research. Kaplan and Stromberg's (2009) survey concentrates on U.S. and European studies, and their empirical analysis contains relatively few observations on Asia. Cumming et al. (2007) identify research on the international buyout market (outside the United States and the United Kingdom) as an important area for future work given that the determinants of deal flow, value added, and returns may vary across countries. They encourage international comparative research.

This chapter contributes to the new body of research on Asian private equity markets. We describe the institutional development of Asian LBO markets, drawing on historical comparative studies. Financial returns to Asian LBOs and growth investments are analyzed with reference to returns to going-private transactions and realized private equity investments. Finally, we present evidence on governance and operational change in Asian LBOs using a new data set comprising company-level data across all major Asian economies.

The Evolution of the Asian Leveraged Buyout Market

The growth and development of the Asian LBO market can be charted from the mid- to late 1990s, when private equity firms successfully raised dedicated pools of capital to attempt control-oriented investments in private companies in the region (see Table 24.1). Prior to this the first wave of buyouts in the United States (and then Europe) did not spill over to the Asian region to any great degree (Kaplan 1997; Kaplan and Stromberg 2009). Demand for private capital in Asian markets was motivated by first-generation entrepreneurs seeking venture or growth capital, with a strong preference from the founders to maintain equity (and operational) control over their companies. Private equity in Asia in the late 1980s and early 1990s was predominantly the provision of growth financing to small and midsize companies, which were the engine of economic development in newly industrialized countries (e.g., South East Asia; Naqi and Hettihewa 2007). In more developed economies, private equity played a niche role filling financing gaps in formal capital markets (e.g., financing small companies in Australia; see Ferris 2001).

The first wave of private equity fundraising for Asian LBOs took place between 1998 and 2001 and was associated with:

1. A coincidence of regional buyout funds (and specialist local teams) being established by leading U.S. and European LBO firms (e.g., CVC Capital Partners, J.P. Morgan; the Carlyle Group; Texas Pacific Group [TPG]).
2. Several larger Asian economies offering corporate restructuring investment opportunities following the Asian currency crisis (specifically South Korea, Japan).
3. Institutional investor appetite for alternative asset exposure in the Asian region, which increased the growth rate of new fund management firms offering investment services in private equity.

Figure 24.1 presents capital commitments to Asian private equity funds between 1992 and 2009. The increase in capital under management in the region

Table 24.1 Historical Comparative Studies on Asian Private Equity: Key Findings

Author(s)	Country/Sample Description	Data Source(s)	Method of Analysis	Summary of Findings
Martin (1999)	Australia, mid-1980s to 1999	*Australian Venture Capital*; Australian Centre for Management Buyout Research; Thompson Financial Venture Economics Database	Tabulated data and graphical analysis	Market size is capped by size and structure of the economy; expect only a few private equity firms to service the market.
Ferris (2001)	Australia, 1990s	*Australian Venture Capital*; Thompson Financial Venture Economics Database	Tabulated data	Growth of the Australian market was aided by government support of venture capital.
Koh (2005)	Asia, 1999–2003	Global Private Equity Reports, 2002–2004; 3i; PriceWaterhouseCoopers	Comparison of the distribution (in percentage) by stage (early, expansion, late, buyout) of investments and year	Buyout transactions increased relative to other stages of private equity investments.
Mayer et al. (2005)	500 venture capital funds in Germany, Israel, Japan, and the U.K. for the year 2000	Venture capital associations in Germany, Israel, and the U.K.; survey data from Nikkei Kinyu (Financial Nikkei) for Japan	Comparison of means, correlations, regression analysis	Variation in sources of funds and investment activity is not related to type of financial system. Country-specific factors are important in explaining variation in venture capital.
Wright et al. (2005)	Japan, 1990–2003	Survey data, Centre for Management Buyout Research (CMBOR), Barclays Private Equity, Deloitte, MRI	Comparison of factors influencing private equity development	Economic performance in the 1990s and the pressure for corporate restructuring generated investment opportunities for Japanese private equity firms. Demand from Japanese managers for a management buyout is traditionally low. Infrastructure (legal framework, capital market, and taxation regime) for buyout deals is favorable.
Li and Wang (2005)	China, 1993–1999	Literature review	Descriptive statistics, regression analysis	Privatization in China is usually undertaken by incumbent management, and is more likely when firms are smaller and less profitable, local government leaders have fewer management skills, and banks enforce fiscal discipline.

Cumming (2007)	280 Australian venture capital and private equity funds, 845 entrepreneurial firms, 1982–2005	AVCAL Thompson Financial Venture Economics Database	Descriptive statistics, univariate analysis, regression analysis	Innovation Investment Fund program has fostered the development of the Australian venture capital industry and fostered formation of new technology companies.
Naqi and Hettihewa (2007)	Asia	Literature review, *Asian Venture Capital*	Graphical data	Asian venture capital is different from that in the U.S. and Europe due to variations in economic and political conditions, "hands-off" business culture, role of governments, and focus on financing the economic development needs of countries.
Wright (2007a)	Buyout markets in the U.K., Germany, Central and Eastern Europe, and Japan, 1990s–2000s	CMBOR	Comparative analysis of the factors influencing the development of LBO markets	Divestments are largest source of deal flow in Japan. Buyouts of privately held family firms increased in relative importance.
Fang and Leeds (2008a, 2008b)	China, India	Case studies of Hony Capital (investee company—China Glass), 3i Group PLC (Little Sheep), ICICI Ventures (Subhiksha), Warburg Pincus (Bharti Tele-Ventures)	Review of deal structure and strategy for each company, role of private equity	Growth transactions may involve substantial minority equity positions and the use of "negative control" clauses in shareholder agreements.
Wright and Bruining (2008)	International buyout markets, 1997–2006	CMBOR, Thompson Financial Venture Economics Database	Tabulated data and graphical analysis	Asian public-to-private transactions were not a large proportion of Asian LBOs, with the exception of the Australian and Japan markets.

Notes: This table summarizes the key findings from historical comparative studies on the development of Asian private equity markets. We have selected articles that provide distinct findings on a particular market or region or provide comparative analysis with other private equity markets around the world. Additional studies can be found in the text and reference list.

between 1998 and 2001 is noticeable, with capital raised during this period almost two times greater than in the pre-1998 period.

The global LBO boom between 2004 and 2008 was the impetus for the second phase of development of the Asian LBO market. As Kaplan and Stromberg (2009) have documented, the growth in the LBO market at this time was magnified by the availability of debt (in particular, growth in size of the securitization market), the emergence of secondary buyouts, and an increase in the number of public-to-private transactions. In addition LBOs in "less traditional" industries such as "non-manufacturing continued to grow in relative importance, and private equity spread to new parts of the world, particularly Asia" (128). Capital committed to Asian private equity increased over threefold between 1998–2001 and 2004–2008.

The institutional development of the Asian LBO market between 1998 and 2008 was concentrated on the developed economies of Japan, Australia, and (in the first phase) South Korea. As historical comparative studies have shown, it was these economies that attracted the earliest attention from investors in terms of capital flows (see Wright 2007a on LBOs; Jeng and Wells 2000 and Mayer et al. 2005 on venture capital). Japanese economic performance during the 1990s and the pressure for corporate restructuring resulted in the emergence of a small LBO industry (see Wright and Kitamura 2003; Wright et al. 2003, 2005). While commentators believe that the Japanese market did not reach its potential (e.g., private equity penetration ranked well below similar economies in Western Europe; see Wright and Bruining 2008), attitudes toward LBOs and private equity as a form of governance changed in the late 1990s and 2000s. In particular, LBOs became more accepted as a form of ownership due to global competitive pressures on Japanese corporations, shareholder demands for higher equity returns, excessive

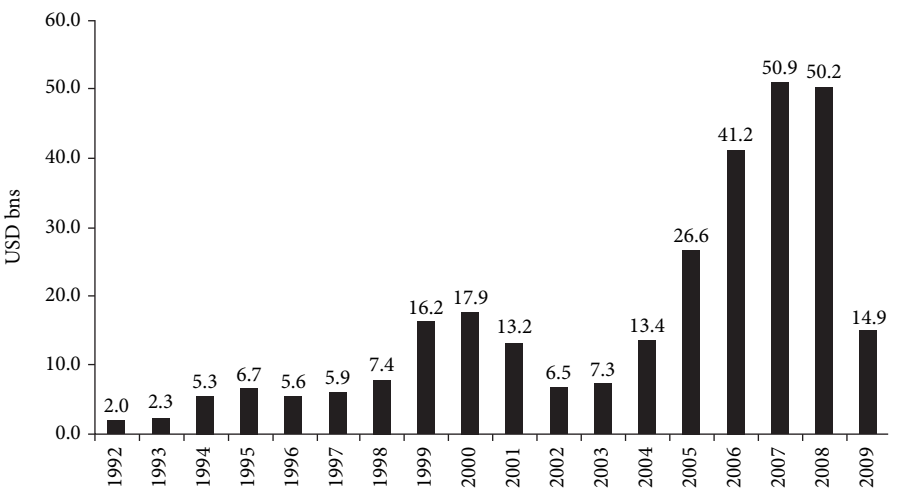

Figure 24.1 Asian private equity capital commitments, 1992–2009.
This figure presents capital committed to Asian private equity funds, by vintage year. All values are in current U.S. States dollars (billions).
Source: *Asian Venture Capital* (various years).

debt burdens of conglomerates, divestment of inefficient subsidiaries, and a change in attitude toward mergers and acquisitions (M&A) given the breakdown of the implicit contract of lifetime employment. As a result Japanese LBOs were more likely to be driven by the need to restructure or "revitalize" a company than by securing efficiency improvements (Wright et al. 2003). This can be seen in the fact that divestments by corporations of noncore divisions have consistently provided the largest source of deal flow to date (Wright 2007a, 284–292).

The Australian LBO market grew for different reasons. A small, open, developed economy with established finance markets provided a conducive environment for the growth of LBO transactions. Koh (2005), Wright and Bruining (2008), and Kaplan and Stromberg (2009) identified the Australian market as benefiting most from the increased internationalization of the LBO industry during the mid-2000s. Transaction technology developed in the United States or Europe could more easily be transferred to the Australian market, where institutional structure (laws, language, and culture values) and the availability of debt financing was more in tune with developed LBO markets. Martin (1999) and Ferris (2001) document the growth of the Australian market from the earliest LBOs in the mid-1980s to the increasing role of government in supporting the Australian market through policy initiatives and a robust pension system. As Cumming (2007) noted, the Australian market also increased in professionalization and scale, due in large part to government policies facilitating investment in private companies.

The second phase of development also saw the reemergence of growth capital as an important part of the Asian private equity landscape (Naqi and Hettihewa 2007). These investments were primarily located in China and India, where rapid macroeconomic growth, demographic change, and legal and financial reforms were providing opportunities for entrepreneurs to create new businesses and markets or expand existing companies.[2] Fang and Leeds (2008a, 2008b, and associated cases) illustrate that growth transactions involved substantial minority equity positions and the use of "negative control" clauses in shareholder agreements (including meaningful board participation, veto on key decisions, right to hire senior executives).[3] Lerner and Gurung (2008) observe that companies in these countries do not require leverage (as in more traditional LBO markets) as much as strategic advice and operational support from growth capital investors. In a wider context Li and Rozelle (2003, 2004) examine the privatization of government-owned firms in China in the 1990s and the use of management buyouts. Few privatizations involved third parties, with 88 percent of firms sold to incumbent management. Li and Wang (2005) show that privatizations are most likely a result of local governments realizing that private managers have a comparative advantage in operating firms as domestic industries change. Private equity as a sponsor of privatizations has yet to gain a foothold.

Investment data between 2004 and 2008 illustrate the increasing importance of China and India in Asian markets (see Table 24.2). The Chinese and Indian private equity markets combined grew between 2004 and 2008 to provide 60 percent of investments (by number), with a corresponding increase in investment value

Table 24.2 Asian Investment Activity (Value and Number), 2004–2008

	2004	2005	2006	2007	2008
Value of Transactions (%)					
Developed Asia	67	53	60	44	39
China and India	19	38	29	36	49
Rest	14	9	11	20	12
Total	100	100	100	100	100
Number of Transactions (%)					
Developed Asia	55	43	42	37	33
China and India	34	48	51	54	60
Rest	11	9	7	9	7
Total	100	100	100	100	100

Notes: This table reports the percentage of value of transactions and number of transactions for select country groupings in the Asian private equity market. "Developed Asia" comprises Australia, Japan, New Zealand, and South Korea. "Rest" comprises Hong Kong, Malaysia, Singapore, and Taiwan.

Source: Calculated from data provided by the *Asian Venture Capital* (various years).

(as measured by invested capital; 49 percent). In absolute terms Chinese investments increased from 61 transactions in 2004 to 303 transactions in 2008, a fivefold increase (similarly Indian investments increased from 45 transactions in 2004 to 262 transactions in 2008, a sixfold increase). By comparison the total number of Asian transactions increased threefold during the period (from 311 to 939 transactions), with more developed markets such as Japan and Australia growing less rapidly (by 200 and 127 percent, respectively). The growth in value of transactions in China and India most likely reflects the growth in size of minority equity investments (as private companies increased in scale) as well as the emergence of a buyout industry in China in particular.[4]

The contribution of Asian LBOs and growth capital investments to the market for corporate control mirrored that in the United States and Europe (Kaplan and Stromberg 2009). Asian LBOs during the 2004–2008 boom years constituted almost 20 percent of M&A activity, as measured by the enterprise value of target companies (see Table 24.3).

However, unlike in the United States and Europe, the penetration of Asian public-to-private transactions was not great, with only Australia (and to a lesser extent Japan) providing the most visible manifestation of the LBO boom (Wright and Bruining 2008, 16). Indeed, consistent with the observation that Australia benefited most from the internationalization of LBOs, Australia was also the only developed Asian country that faced increased scrutiny from global investors (and government) as iconic companies were subject to going-private bids. To illustrate this point, Table 24.4 documents twenty of the largest LBO transactions

Table 24.3 Asian M&A Activity and Private Equity, 2004–2008

Year	Asian M&A Transaction Value (USD bn)	Private Equity Share of M&A (%)
2004	245.4	8.3
2005	250.8	13.6
2006	368.8	18.0
2007	520.7	17.1
2008	417.5	13.2

Notes: This table reports the transaction value of all M&A transactions (as measured by the value of the target company) in the Asian region (expressed in current U.S. dollars [billions]). Private equity market share is the percentage of transactions that included private equity firms as participants in the acquiring entity.

Source: Calculated from data provided by the *Asian Venture Capital* (various years); UBS Private Funds Group (2009).

(by enterprise value) between 2006 and 2008 and the status of each bid and private equity firm (or consortia) involved.

The data indicate that three out of five of the largest transactions in the region were Australian targets, with two prominent companies—Coles Myer (supermarkets) and Qantas (airlines)—receiving public-to-private bids that were eventually rejected by public shareholders. Indeed Australian and Japanese LBO targets dominated the list of largest transactions for this period, and the bidding consortia often involved global LBO firms acting in unison. These Asian "club deals" involved similar firms that have been found to be the most active participants in club deals in other jurisdictions, notably Blackstone; KKR, Bain Capital, the Carlyle Group, Goldman Sachs, Silver Lake; and TPG (see Officer et al. 2010). Asian club deals have yet to receive academic scrutiny.

What do the historical comparative studies tell us about which factors influenced the size and growth of Asian LBO markets? Traditional LBOs have been most prevalent in developed economies in the region, which possess larger debt and equity markets, certainty over creditor rights, tax transparency, and an acceptance of change in control. Our observations are consistent with the law and economics literature that highlights the importance of legal institutions in the development of finance markets and economic growth (La Porta et al. 1998, 2002). Cao et al. (2010) have shown that LBOs are more likely to take hold in an economy when institutional factors provide a conducive environment for investors to invest with certainty over treatment of financial outcomes. The rise of LBO markets in Australia, Japan, and South Korea is consistent with this view.[5]

Asian markets also illustrate that "not just law matters." The development of growth equity in China and India supports the notion that private investors have the ability to mitigate impediments in the institutional environment, or at

Table 24.4 Select Asian LBO Transactions, 2006–2008

Target Company	Country	Size (USD bn)	Public-to-Private	Status	Private Equity Bidder(s)
Coles Myer	Australia	14.4	Yes	Failed	KKR; Blackstone; Bain; Carlyle; CVC; TPG
Qantas	Australia	8.3	Yes	Failed	Macquarie; Allco; TPG
Adv. Semi. Eng.	Taiwan	6.6	Yes	Failed	Carlyle; Goldman Sachs
PBL Media	Australia	4.5	—	Closed	CVC*
Kanebo	Japan	3.2	—	Closed	Advantage; MKS; Unison; Kao Corporation
Skylark	Japan	3.1	—	Closed	CVC; Nomura
Seven Network	Australia	3.1	Yes	Closed	KKR
Sensata Technologies	Pan-Asia	3.0	—	Closed	Bain; Unitas Asia
Avago Technologies	Singapore	2.8	—	Closed	KKR; Silver Lake*
Tokyo Star Bank	Japan	2.7	Yes	Closed	Advantage*
Ashikaga Bank	Japan	2.7	—	Closed	Nomura; Next Capital*
Arysta Life Sciences	Japan	2.2	—	Closed	Permira
Sanyo Electric	Japan	2.2	—	Closed	Goldman Sachs; Daiwa SMBC
DCA Group	Australia	2.1	—	Closed	CVC*
Coates Hire	Australia	1.9	—	Closed	KKR*
NZ Yellow Pages	New Zealand	1.7	—	Closed	Unitas Asia; Ontario Teachers
Stella Group	Australia	1.4	—	Closed	CVC
Toshiba Ceramics	Japan	1.4	—	Closed	Carlyle Japan; Unison
UTAC	Singapore	1.4	Yes	Closed	TPG; Affinity
BIS Cleanaway	Australia	1.4	—	Closed	KKR

Notes: This table reports twenty of the largest announced LBO transactions in the Asian region between 2006 and 2008, by order of size. Size is measured as the estimated enterprise size of the LBO target, expressed in current U.S. dollars (billions), at the time of the first bid (or on completion). Public-to-private is denoted "Yes" if the target was listed on a stock market at the time of the bid and the bid proposal was for a taken-private transaction. "Status" refers to whether the target company was purchased by the private equity bidder (or bidder group). An asterisk indicates that the private equity firm involved in the bid financed the transaction from funds under its management, together with additional capital from its limited partners (i.e., the transaction included "co-investment" from limited partners).

Sources: General partner websites; target company websites; *Financial Times*; *Asian Wall Street Journal*; *Asian Venture Capital*.

least a priori price the risk from such impediments into the investment decision. Importantly, control-oriented transactions in China and India do not require substantial debt. Investment risk is managed at the firm level through contracting structures, under conditions of legal and tax uncertainty. While there is no quantitative analysis on which factors influence Asian LBO market development, we conjecture that deal flow and investment opportunities will dominate legal and institutional factors. The macroeconomic growth trajectories of China and India will likely result in these economies generating the majority of LBO and growth transactions into the foreseeable future.

Financial Returns in Asian Private Equity

Asian LBOs generate financial returns similar to private equity transactions in the United States and Europe. It is well established that going-private transactions exhibit positive abnormal announcement effects due to the belief that managerial opportunism will be reduced and interests better aligned once the firm is taken private (Cumming et al. 2007). Abnormal shareholder gains are also associated with undervaluation of the target company and increased tax shields (see, for example, Lehn and Poulsen 1989; Oper and Titman 1993; Renneboog et al. 2007). LBOs taken private also show positive industry-adjusted returns following a relisting (Cao and Lerner 2009).

The research on Asian LBO markets provides insights similar to those provided by U.S. and European studies (see Table 24.5). For Australian public-to-privates, Eddey et al. (1996) and Evans et al. (2005) document positive announcement effects to news of a going-private transaction, although both studies find little relationship between levels of free cash flow and the likelihood of going private. Eddey et al. conjecture that going private may be a response to a perceived threat of a competing bid, and such bids are often driven by the belief that there are abuses of free cash within the firm. Evans et al.'s sample shows that Australian firms going private are more likely to have higher liquidity and lower growth rates, leverage, and R&D expenses. The results from Chapple et al. (2010) also suggest that LBO investors target firms where managerial opportunism may reside. These researchers study twenty-three target firms that were subject to a takeover bid by private equity during the LBO boom of 2001–2007 and find that target firms were larger and more profitable and possessed more free cash flow than matched control firms. This together with lower growth prospects indicates that private equity–sponsored public-to-private firms have features of financial and managerial "slack," allowing the introduction of new strategies to reduce poor managerial performance and improve profitability and economic efficiency.

Table 24.5 Financial Returns to Asian LBOs: Summary of Key Studies

Author	Sample Description	Data Source	Method of Analysis	Summary of Findings
Eddey et al. (1996)	46 Australian firms going private from 1998 to 1991 and a matched sample of 46 public firms	*Australian Financial Review*; Australian Stock Exchange	Comparison of means tests, logit regression analysis	Australian going-private transactions generate positive announcement effects and may be a response to an actual or perceived threat of a competing bid. The premium paid increases with the level of ownership dispersion. Higher levels of free cash flow are not associated with likelihood of going private.
Li and Rozelle (2003)	643 township enterprises and private firms drawn from randomly sampled 59 townships in 15 countries in Jiangsu and Zhejiang Provinces between 1993 and 1999	Township census data	Descriptive statistics, regression analysis	Chinese firms privatized via a management buyout have higher profit rates than government-owned firms. Managers' incentives are positively associated with financial performance and the buyout premium paid by the management team.
Fleming (2004)	129 venture capital investments by Australian venture capitalists between 1992 and 2002	*Australian Venture Capital* survey responses	Univariate and regression analysis (ordinary least squares and tobit regressions)	LBO and growth capital investments outperform venture capital, after controlling for transaction-specific factors, including type of private equity firm, syndication, duration, method of exit, and exit year. No variation in returns due to manager experience. IPO returns are higher than other types of exit.
Evans et al. (2005)	80 Australian companies going private during 1990–1999 and a matched sample of 80 public firms	SDC Database; Australian Delisting Handbook; *Australian Financial Review*; ASX Datadisc; AGSM Annual Report File	Comparison of means and medians tests, logit and probit regression analysis	The probability of Australian firms going private is associated with lower growth prospects, lower leverage, and lower R&D expenditure. Going private is positively associated with liquidity (current ratio). Higher levels of free cash flow are not associated with likelihood of going private.

Cumming et al. (2006)	468 venture capital–backed companies from 12 Asia-Pacific countries, 1989–2001	Proprietary data from fund-of-funds database	Univariate comparisons, multivariate analysis of average and median IRRs, probit regressions	Probability of IPO in Asia is positively associated with a country's "legality" index. IPOs are positively associated with the size of a country's stock market.
Lee et al. (2009)	80 going private announcements in Malaysia, 2001–2007	Thomson Datastream; KLSE Tracker; company annual reports	Event study methodology, using a market-adjusted returns model	Going-private transactions generate positive shareholder wealth gains, with average abnormal returns of 19% over a two-month period surrounding the announcement. Most going-private transactions involve a dominant controlling shareholder via a related corporation.
Chapple et al. (2010)	23 listed Australian private equity target firms during 2001–2007 and 180 target control firms	Connect 4 Takeovers database; AspectHuntley FinAnalysis	Comparison of means and medians, logit regressions	Private equity target firms are larger and more profitable, use assets more efficiently, are more highly leveraged, and have greater cash flow relative to the matched control firms. Bid premiums on private equity deals are lower than takeover bids on control firms.
Cumming et al. (2010)	756 Asian companies receiving LBO and growth capital financing, 1989–2009	Proprietary data from fund-of-funds database	Univariate and regression analysis	IPOs generate higher average ROI and IRR than other types of exit for Asian LBOs. Trade sales are the most common form of exit, followed by IPOs and write-offs.

Notes: This table summarizes the key findings on financial returns to Asian LBOs. We have selected articles that provide distinct findings on a particular market or on the Asian region. Additional studies can be found in the text and reference list.

Public-to-privates in growth economies such as Malaysia present a slightly different picture. Lee et al. (2009) examine eighty going-private transaction announcements between 2001 and 2007, with sixty-one companies successfully completing a buyout. Going privates were viewed positively, with average abnormal returns of 19 percent over a two-month period surrounding the announcement. Target companies had larger cash balances and higher profitability and growth rates than comparative firms.

Accounting performance typically also improves as a result of a buyout, although it should be noted that "earnings management" may make accounting performance a poor indicator of changes in financial performance. Several studies have found that cash flow–to-sales and total factor productivity improve due in large part to improved governance and operations (Kaplan and Stromberg 2009, 132; Cumming et al. 2007). There is less evidence on Asian LBOs. Three exceptions are Li and Rozelle (2003, 2004) and Li and Wang (2005), who examine Chinese privatizations. Their analysis indicates that privatized firms in China outperform government-owned firms in terms of profit rates, although there is little involvement of third-party investors such as private equity in management buyout transactions.

What characterizes the investment returns to Asian LBOs and growth capital? Larger studies of LBO returns at the investment and private equity fund levels (Ljungqvist and Richardson 2003; Kaplan and Schoar 2005; Phalippou and Gottschalg 2009) show that LBOs, on average, generate positive risk-adjusted returns. In the Asian context, growth capital investments have been studied using data sets focused on venture and growth capital. In Australia Fleming (2004) finds that LBO and growth capital investments outperform venture capital, after controlling for transaction-specific factors, including type of private equity firm, syndication, duration, method of exit, and exit year. A comprehensive cross-country study by Cumming et al. (2006) reports financial returns for 468 venture capital and growth companies from twelve Asian economies. The investment performance of growth capital investments is positively associated with a country's "legality" index—the legal and macroeconomic infrastructure supporting control-oriented investments. Private equity–backed growth companies were more likely to list on a stock exchange if legality was strong and the country's stock market was large. This evidence is consistent with that in the United States and Europe, where LBO returns are greater in countries with stronger legal conditions (Cumming and Walz 2010).

Financial returns to Asian LBOs have only recently become available (see Cumming et al. 2010). Table 24.6 reports return on investment (ROI) and internal rate of return (IRR) for fully realized Asian LBOs and control-oriented investments for 289 private equity–backed companies between 1989 and 2009.[6]

Consistent with U.S. and European studies, Asian LBOs generate positive returns to investors, on average. However, the return data also exhibit skewness, with high ROI/IRR observations positively impacting average returns (most notably in the case of China). The median returns show that risk-unadjusted returns are relatively consistent across different Asian countries. Australia, China, India, Japan, New Zealand, Taiwan, and Thailand have median returns ranging between 1.75 and

Table 24.6 Asian LBOs: Realized Returns and Exit Characteristics

Country	*N*	%	**ROI**		*N*	%	**IRR**	
			Average	**Median**			**Average (%)**	**Median (%)**
Australia	136	47	2.72	2.10	136	50	46	37
China	28	10	11.98	1.76	27	10	87	33
Hong Kong	12	4	0.52	0.06	10	4	−52	−83
India	30	10	3.71	3.00	20	7	133	76
Japan	24	8	3.86	2.01	24	9	89	55
New Zealand	22	8	2.40	2.72	21	8	18	24
Singapore	8	3	4.70	4.04	8	3	78	66
South Korea	3	1	1.46	1.04	3	1	30	1
Taiwan	2	1	2.62	2.62	2	1	34	34
Thailand	7	2	2.66	1.91	7	3	6	13
Other	17	6	1.07	0.23	15	5	−38	−47
Total	289				273			
Type of Exit	*N*	%	ROI		*N*	%	IRR	
			Average	Median			Average	Median
IPO	43	18	5.60	3.18	43	18	142	61
Mgmt buyback	10	4	1.59	1.65	10	4	12	20
PIPE	16	7	3.17	2.85	14	6	122	101
Secondary sale	12	5	3.43	3.32	11	5	41	37
Trade sale	117	49	2.81	2.17	117	50	50	33
Write-off	41	17	0.09	0.00	41	17	−75	−100
Total	239				236			

Notes: This table reports return on investment (ROI) and internal rate of return (IRR) for fully realized Asian LBOs and growth capital investments by country and by type of exit. "Country" is defined as the primary location of the LBO company. "ROI" is defined as the multiple of total return to cost. "IRR" is the internal rate of return for the investment, using the cash flows of the private equity investor, as reported by the investor. In cases where the IRR was not provided, we have calculated the IRR using the holding period (month and year of entry and exit), the cost, and total return. "PIPE" is defined as a private equity investment in a public company.

Source: Cumming et al. 2010.

3.0 times cost, although hold periods are relatively shorter in some countries (e.g., India), which increases the IRR. Given that economic and stock market growth rates varied greatly across countries over the sample period (1989–2009), the data show that positive private equity returns can be generated in a range of institutional and financial environments. Cumming et al. (2010) examine this and other (risk-adjusted) factors in more detail.

Trade sales to strategic buyers are the most common form of exit for Asian LBOs, consistent with larger U.S. and European data sets reviewed by Kaplan and Stromberg (2009, 129). Trade sales make up 50 percent of all exits, with IPO (18 percent) being the second most common exit strategy. Secondary sales (5 percent) are relatively less common than in U.S. and European data. Kaplan and Stromberg report 24 percent of all exits were due to secondary buyouts between 1970 and 2007, although there was large variation across time. The lower incidence of secondary buyouts in Asia is most likely due to the less developed nature of private equity markets and the fewer number of managers operating in the region. Write-offs constituted 17 percent of all exits, higher than in more developed countries due to the inclusion of growth LBOs and control-oriented minority investments.

Asian LBOs that were exited via IPOs provided the highest returns to investors, generating a median IRR of 61 percent per annum (and median ROI of 3.2 times cost). Secondary sales (although only 5 percent of total exits) also performed well, followed by the sale of private investments in public entities (PIPEs) back into the market, trade sales, and management buybacks. The higher returns to IPOs is consistent with U.S. and European studies showing that private equity investors aim to list only their best investments. Cumming and MacIntosh (2003) argue that the probability of an IPO exit is positively associated with the quality of the investment. Firm quality is evident in the low levels of information asymmetry between buyers and sellers in the IPO process (the need for earnings history, public company accounting, governance standards, and so forth), a stable, established management team, and significant growth potential. The priority of IPO returns is also supported by a reputation argument, first applied to venture capital. Private equity firms (like their venture counterparts) wish to generate a reputation for presenting high-quality firms to public markets (Barry et al. 1990; Megginson and Weiss 1991; Lin and Smith 1998). We find that financial returns to Asian LBOs are consistent with the asymmetric information and reputation arguments.

Governance and Operational Change in Asian LBOs

Governance changes and operational engineering associated with private equity ownership have not been studied to any great degree in Asian companies.[7] Until

recently researchers have not possessed firm-level data on Asian companies other than those available through individual case studies (see Fang and Leeds 2008a, 2008b). The international literature shows that active private equity ownership improves managerial behavior and accountability (Acharya et al. 2009; Kaplan and Stromberg 2009, 131). Private equity owners are also more active in operational engineering: initiating operational and strategic change such as value creation plans, acquisitions, divestitures, strategic repositioning, and new product development (Nikoskelainen and Wright 2007; Acharya et al. 2009; Bernstein et al. 2009; see Table 24.7).

The equity ownership of Asian LBOs is reported in Table 24.8 for a sample of 528 companies operating in ten Asian economies, covering the twenty-year period 1989–2009. The table differentiates between countries in which private equity ownership, on average, tends to be majority equity positions (LBO-centric economies) and countries where private equity funds have, on average, minority equity ownership (growth-centric economies). We also show the extent to which minority equity ownership has control features (that is, the private equity fund holds at least 20 percent equity and is able to exert influence on, and block, decisions that may be against minority equity holders' interests).[8]

Australia and Japan are the two largest developed economy LBO markets in the Asian region, and transactions in those markets are characterized by control equity positions. The average equity ownership of majority equity transactions in the LBO-centric economies is between 77 and 91 percent, with the remainder held by the management team (and in some cases the original seller). Growth transactions in these markets are also more likely to be substantial minority positions and have blocking stakes in the company. With the exception of Hong Kong, most minority equity deals have blocking stakes and can be regarded as control-oriented. Asian LBOs therefore feature many of the characteristics of LBO transactions in the United States and Europe. Sponsors hold the majority of equity, and management have equity interest via shares and/or options. In minority deals, control is provided by blocking stakes and the use of negative control features such as veto rights on key decisions and multiple board seats. The similarities suggest that LBO structuring technology can be transmitted across different business cultures and legal jurisdictions.

Private equity ownership in the growth-centric economies of China and India is usually minority equity (87 percent of Chinese private equity deals; 71 percent of Indian deals). Furthermore the equity positions are, on average, below 30 percent and very often do not involve blocking stakes. This is consistent with the evidence reviewed previously in this chapter, where the demand for private equity in growth-centric economies is from founder entrepreneurs who are not seeking to exit their companies to a private equity buyer. Taiwan and South Korea are also growth-centric markets where private equity has played an important role in financing the growth and development of small and medium-size enterprises. Equity ownership in Taiwan and South Korea is between 27 and 37 percent, on average, with median

Table 24.7 Key Findings on Governance and Operational Engineering in Asian LBOs

Author	Sample Description	Data Source	Method of Analysis	Summary of Findings
Li and Rozelle (2003)	643 township enterprises and private firms drawn from randomly sampled 59 townships in 15 countries in Jiangsu and Zhejiang Provinces between 1993 and 1999	Township census data	Descriptive statistics, regression analysis	Privatized (formerly government-owned) firms in China show no difference from government-owned firms in terms of employment growth.
Westcott (2009)	Australian case study	Company filings; press reports	Qualitative analysis	Private equity owners in Australia seek to improve a range of financial and operational areas of the company in order to maximize equity returns. No evidence that employment reduction is the primary focus of operational change.
Cumming et al. (2010)	756 Asian companies receiving LBO and growth capital financing in 1989–2009	Proprietary data from fund-of -funds database	Univariate and regression analysis	One-third of management is replaced in Asian LBOs, with no significant difference across countries in management turnover. Asian LBOs are more likely to involve acquisitions than divestitures.

Notes: This table summarizes key findings on governance and operational engineering in Asian LBOs. We have selected articles that provide distinct findings on a particular market or on the Asian region. Additional studies can be found in the text and reference list.

Table 24.8 Governance in Asian LBOs

Equity Ownership	*N*	Equity Holding (%)		% Deals with Majority Equity	Average Equity Ownership (%)	% Deals with Minority Equity	Average Equity Ownership (%)	% of Minority Deals with "Blocking" Stake
		Average	Median					
Australia	147	65	70	69	79	31	37	91
Hong Kong	13	50	60	54	79	46	18	33
Japan	80	64	71	70	82	30	23	50
New Zealand	11	74	91	73	91	27	31	67
Singapore	14	59	66	71	77	29	16	50
Thailand	14	58	69	57	85	43	23	50
China	133	28	27	13	66	87	23	58
India	49	32	27	29	67	71	18	43
South Korea	33	37	32	30	73	70	23	43
Taiwan	10	27	18	20	85	80	13	25
Other	24	48	49	50	79	50	17	42
Total	528							

Notes: This table reports equity ownership by LBO and growth capital funds in Asian companies. Equity ownership is measured as the percentage of equity held by the private equity owner (or in club deals, the total equity held by all private equity investors). Minority equity is defined as equity positions of 49% or less. Minority "Blocking Stakes" is defined as equity ownership between 20 and 49%.

Source: Cumming et al. 2010.

equity holdings in Taiwan substantially smaller than in other markets. It is also less likely that minority private equity in Taiwan has a blocking stake.

Overall the Asian LBO market presents two types of control-oriented private equity: "traditional" LBO transactions and growth control-oriented transactions. Transaction structures are similar across traditional Asian LBOs and take their lead from the United States and Europe. However, in growth economies equity investments often do not involve equity control. Private equity investors rely on agreement and alliance with the founder or entrepreneur on key decisions and strategies to ensure that an investment generates the required return (see Fang and Leeds 2008 for examples). The transaction structure of control-oriented growth equity in Asia provides researchers with a valuable institutional variation on other private equity markets.

Recent studies have found that private equity owners hold company management accountable for financial and operational performance. As a result it is not uncommon for LBO companies to have turnover at senior management positions

due to poor performance. LBO owners (typically) are active in corporate governance and are able to make management changes because they have majority equity ownership and the majority of board seats. Acharya et al. (2009) studied private equity transactions in the United Kingdom between 1996 and 2004 and found that one-third of CEOs are replaced in the first one hundred days of an LBO, and two-thirds are replaced at some point over a four-year period. Table 24.9 reports managerial change in Asian LBOs using the Cumming et al. (2010) data.

Managerial turnover is lower in Asian LBOs than that recorded by Acharya et al. (2009). Only one-third of LBOs experienced a change in senior management (CEO, chief financial officer, and/or chief operating officer), even though the average hold period (4.2 years) for Asian LBOs is similar to that in the U.K. study. Indeed given the wider definition of management change used by Cumming et al. (2010) (i.e., including three senior officers), we believe that it is highly possible that Asian LBOs are distinctive from LBOs in the United States and Europe in this regard.

Table 24.9 Managerial Change in Asian LBOs

Country	*N*	Hold Period	Senior Management	
		Years	No Change (%)	Change (%)
Australia	157	3.4	67	33
China	48	3.8	60	40
Hong Kong	16	5.4	63	38
India	23	3.3	48	52
Japan	82	5.3	68	32
New Zealand	11	2.6	82	18
Singapore	21	3.5	67	33
South Korea	27	4.8	63	37
Taiwan	14	4.2	79	21
Thailand	11	5.0	73	27
Other	14	5.7	57	43
Total	424	4.2	66	34

Notes: This table reports managerial change in Asian LBOs during the period in which a private equity fund was an owner. The data are derived from company reports and private equity manager fund reports on company management composition and key changes of senior management reported each quarter or year. A change in senior management is defined as the departure of the chief executive officer (CEO), chief financial officer (CFO), or chief operating officer (COO).

Source: Cumming et al. 2010.

Table 24.10 Operational Change in Asian LBOs

Country	*N*	Acquisition		*N*	Divestiture	
		Yes (%)	No (%)		Yes (%)	No (%)
Australia	157	52	48	141	11	89
China	34	85	15	34	9	91
Hong Kong	15	80	20	16	13	88
India	20	70	30	17	6	94
Japan	82	93	7	82	12	88
New Zealand	12	58	42	11	9	91
Singapore	13	69	31	13	0	100
South Korea	27	85	15	27	4	96
Taiwan	11	73	27	10	0	100
Thailand	14	93	7	14	7	93
Other	21	76	24	21	10	90
Total	406			386		

Notes: This table reports acquisition and divestment activity by Asian LBOs during the period in which a private equity fund was an owner. The data are derived from company reports and private equity manager fund reports on company performance and strategic change each quarter or year.
Source: Cumming et al. 2010.

It should also be noted that the incidence of senior management change is not significantly different across countries, including Japan. Private equity ownership is active ownership despite the structure of the local labor market or other cultural factors that may a priori lead one to believe that removal of senior management is difficult. For example Wright et al. (2005) believe that the receptiveness of private equity in Japan has been associated with a change in attitude toward M&A and the breakdown of the implicit contract of lifetime employment. Consistent with this view, it does not appear that the labor market rigidities in the Japanese economy make it any more difficult for Japanese private equity investors to remove management than in other Asian markets.

Cumming et al. (2010) also provide the first data on operational change instigated by private equity owners in Asian companies (see Table 24.10). Two types of operational changes were analyzed: acquisitions and divestitures. Asian LBOs are more likely to involve acquisitions than divestitures, with companies operating in the growth markets of China, India, South Korea, and Taiwan most active in acquisitions. These observations can likely be explained by the growth opportunities

that confront established businesses in economies undergoing rapid economic growth. Private equity helps these companies improve their competitive position, and acquisition is a strategic (and perhaps more rapid) approach to increasing market share (over and above organic growth). Lerner and Gurung (2008) state that operational and strategic skills are highly valued by private equity–backed companies in these markets. Divestitures in these countries are less common.

LBOs in the established markets of Japan and Australia (and New Zealand) are more likely to be associated with restructuring, where both acquisitions and divestitures are undertaken by companies. Acquisitions are less common in Australia (52 percent) and New Zealand (58 percent) than in Japan (93 percent), while divestitures rates are similar. Japanese LBO deal flow goes some way to explaining why acquisitions are common as a growth strategy in this market. Wright (2007a) notes that divestments by corporations of noncore divisions have consistently provided the largest source of deal flow in Japan. Private equity investors help "orphan" divisions leave their corporate parent and position themselves as independent companies. This structural (and financing) freedom may also provide the company with opportunities to increase market position by acquisition, a strategy stifled inside the wider corporate grouping.

Finally, operational change can involve changes to the capital-labor mix. Internationally there is no conclusive evidence that LBOs are associated with lower employment levels (Cumming et al. 2007) and may be associated with higher total factor productivity (Kaplan and Stromberg 2009). Li and Rozelle (2003) found no difference in employment growth between government-owned Chinese firms taken private by management and government-owned firms. Westcott (2009) reviews recent arguments in Australia that private equity owners would seek to generate financial returns by reducing employment costs. Westcott argues that employment was not reduced, suggesting that private equity seeks to improve a range of financial and operational areas of the company in order to maximize equity returns.

Future Research

Research on the Asian LBO and growth equity market is in its infancy. This is not surprising, as the institutional history of the market is substantially younger than the U.S. or European history. Existing literature has focused on the institutional development of particular countries or on topics for which public data are available (e.g., public-to-private transactions). The construction of new data sets and increased data availability from third-party providers are cause for optimism that research can be extended into new areas.

This chapter has reviewed a range of studies on Asian LBOs, especially country-specific studies. We have also discussed data from a recent study on LBOs

across the region, and how governance and operational change takes place in Asian companies. There is still much to be investigated on Asian LBOs, especially in understanding the financial characteristics of transactions. There is a growing body of research on the United States and Europe from which authors can draw comparisons. In terms of governance, both international and Asian studies can provide guidance. We offer some potential research questions here, informed by Asian studies in two related areas: Asian venture capital and corporate restructuring in Asian companies.

Venture capital studies show us that Asian private equity markets contain different types of private equity investors: owner-operated firms (independent private equity funds), bank-sponsored funds, and funds affiliated with corporations and securities companies. With the exception of independent firms, most of these funds invest across a range of companies, including venture, growth-oriented, and small LBOs (see Cumming et al. 2008). Do banks (or other firms) systematically choose different types of firms in which to invest? Governance and value added also vary by ownership structure of the venture capital investor. Kuroki et al. (2000) show that equity return maximization is not the only criterion for investment in private companies in Japan, especially for nonindependent firms. Hamao et al. (2000) find that public offering underpricing varies by type of investment firm. And Yoshikawa et al. (2004) and Cumming et al. (2008) find that the level of value added (including, for example, strategic advice and regular contact with management) is lower for bank-sponsored investment funds. Is this behavior also manifest in Asian LBOs?

Corporate restructuring studies on Asian companies also provide opportunities for greater analysis of the impact of private equity. LBOs are playing a larger role in facilitating restructuring and family succession. However, studies on corporate spin-offs and divestitures in Australia (Cooney et al. 2004), Singapore (Koh et al. 2005), and Japan (Rose and Ito 2005) do not delineate by type of purchasers of the divested asset. To what extent does private equity ownership differ from other forms of ownership in corporate spin-off transactions? Family succession "events" have recently attracted attention (see Fan et al. 2008), and yet we know very little about the role of private equity in these types of changes in corporate control. Do LBOs perform in companies where there is a greater reliance on the entrepreneurial spirit and networks of the founder or owners?

Summary and Conclusions

This chapter contributes to a growing body of research on Asian private equity markets. We draw inspiration from the work of Cumming et al. (2007), who issue a call for international comparative research. The chapter describes the institutional

development of Asian markets and examines the financial returns, governance, and operational changes in Asian LBOs.

Asian LBOs generate financial returns similar to private equity transactions in the United States and Europe. This can be seen in studies of going-private transactions as well as data sets of realized private equity returns. However, many questions remain unanswered; in particular there is need for a more comprehensive examination of idiosyncratic risks associated with Asian LBO investments, leverage, and risk-adjusted returns. Governance changes and operational engineering associated with private equity ownership have not been studied to any great degree in Asian companies, due in large part to the lack of detailed data on private equity–backed companies. We can only encourage researchers to explore diverse data sources in order to improve our understanding of the nonfinancial impact of private equity on companies.

The rise of public-to-private bids between 2004 and 2008 has also yet to be catalogued in great detail, especially in terms of capital structure. There is valuable international research from which to draw techniques and comparisons. Similarly, complementary research programs in Asian studies, small business studies, and economic geography may help finance students shed light on the interaction between institutional fund managers and growth capital in founder- (and family-) operated businesses.

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Notes

1. The analysis and data in this chapter encompass all countries in the Asian region, including Australia and New Zealand.
2. Practitioner publications have led the commentary on the development of these markets. See, for example, Bruton et al. 1999; Ippolito 2007.
3. The emergence of venture capital markets in these countries has also been documented. On China, see Ahlstrom et al. 2007; Wright 2007b. On India, see Pruthi et al. 2003.
4. As Lerner and Gurung (2008, x) note, LBOs in China are being transacted with "uniquely Chinese characteristics that reflect the country's legal and economic realities." Li and Rozelle (2003, 2004) and Li and Wang (2005) examine Chinese privatizations and management buyouts in more detail.
5. Similarly when changes to the tax treatment of foreign investors were introduced in these countries (Japan, South Korea in early 2000s, and Australia in late 2000s) we

witnessed a decline in LBO transactions sponsored by nonlocal private equity firms. This suggests that it is certainty over outcomes rather than "civil law" (Japan, South Korea) versus "common law" (Australia) systems per se that dominate investment decisions. Notably in the cases of Japan and Australia local firms continued to secure deal flow and increased their "market share" of LBO transactions.

6. The return data are described in more detail in Cumming et al. (2010). The IRR data use the cash flows of the private equity investor, as reported by the investor. The authors have completed reasonableness checks on the IRR calculations. In cases where the IRR was not provided, the authors calculated the IRR using the holding period (month and year of entry and exit), investment cost, and total return. This method biases the IRR downward by assuming all cash flows into the company occur on the first day of the investment and are returned to the investor on the last day (i.e., it does not allow for interim cash flows, which could increase the IRR).
7. We borrow the term "operational engineering" from Kaplan and Stromberg 2009.
8. Private equity–backed companies do not tend to suffer from the separation of voting rights from cash flows rights, which has been a common feature of Asian corporations (see Claessens et al. 2000).

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CHAPTER 25

PRIVATE EQUITY IN CHINA

TAKESHI JINGU

China's private equity market is growing. *Asian Venture Capital*, a journal specializing in private equity in Asia, estimates that investment in China's private equity market (including Taiwan) totaled $14.46 billion (roughly RMB100 billion) in 2006, which represents growth by a factor of more than 10 over little more than four years. Investment appeared to be running at about the same pace in 2007, with a total for the first six months of $7.42 billion.

In this chapter I first examine the extent to which changes in China's private equity–related laws and regulations have affected the development of private equity in China. Because China's capital markets have yet to fully develop, private equity has been primarily an offshore activity. China's capital markets have come a long way over the past several years, however, including by resolving problems related to nontradable shares, introducing private equity–related laws and regulations, developing domestic private equity funds, and establishing multitier capital markets. So, second, I examine capital markets for growth companies in China, the Small and Medium-Size Enterprise Board, the Second Board (the ChiNext), the Third Board, and the property exchanges.

The Development of China's Private Equity Market and Regulations

Development of the Private Equity Market

Developments Offshore (from the 1980s until the IT Bubble Collapse)

Private equity funds in China have developed in principal under government guidance. From the late 1980s until the mid-1990s the funds were aimed more at

supporting the development of science and technology rather than the development of capital markets (Li and Li 2008). China's first venture capital (VC) fund was established in 1985, and its first VC fund with a mix of domestic and foreign capital was established in 1989. VC funds had not yet established much of a foothold at that time.

VC funds gradually began increasing their presence in 1997. When China's IT firms started attracting attention, overseas VC funds started getting into the act. The "red-chip" listing (explained below) was created in 1999, wherein Chinese IT firms with VC funding were listed on the NASDAQ. One reason for this was that the criteria for listing on China's domestic exchanges were difficult to meet.

Ownership of a red-chip listing is transferred to a holding company, which is a special purpose vehicle (SPV) established in a tax haven such as the Cayman Islands by the founders of the domestic venture. At this point the domestic venture becomes a wholly foreign-owned enterprise in what is termed an "overseas restructuring." Next the overseas VC fund invests in the SPV (increasing the SPV's capital), and then the SPV is listed on an overseas market. From the overseas VC fund's perspective, this is an offshore investment from offshore.

Because the domestic venture becomes a foreign-invested enterprise using this method, in those industry sectors where foreign investment is restricted or prohibited (including telecommunications and the Internet), the SPV creates a separate holding company in China, and the holding company and domestic venture firm sign a commercial agreement (to provide services, for example), thereby providing a vehicle to capture the domestic venture's profits.

Red-chip listings reached a peak during the global IT boom of 1999–2000, and many of them were quite successful. A number of high-tech firms were on the verge of being created during this time, but the whole process was set back by the bursting of the dot-com bubble in the United States.

China's private equity sector shrank in 2001–2003, following the IT boom's collapse. A number of problems then came to the surface, and in January 2003 the Chinese government announced its Rules Governing Foreign-Invested Venture Capital Enterprises (implemented on March 1, 2003; explained below). These rules are still used today.

Then in January 2004 capital market reforms were given a major boost when *Some Opinions of the State Council on Promoting the Reform, Opening and Steady Growth of Capital Markets* (the *Nine Opinions*) was published. The *Nine Opinions* included a proposal to build multitier capital markets and wound up promoting both VC investments and the establishment of the Growth Enterprise Market.

Meanwhile the government's policies on overseas listings were in a constant state of flux. When the IT bubble collapsed in 2000, a no-action letter from the China Securities Regulatory Commission (CSRC) became necessary for red-chip listings, but was later rescinded. In 2005, amid complaints that high-quality assets were being drained off overseas, the State Administration of Foreign Exchange (SAFE) issued notices aimed primarily at controlling illegal funds flows, both inbound and outbound (Order No. 11 and Order No. 29). Although this had an

adverse impact on overseas listings, that same year SAFE issued Order No. 75, enabling China residents to procure funding through overseas SPVs, and red-chip listings resumed.

Capital Market Reforms and the Encouragement of Domestic Listings

China's capital market reforms, including reforms to nontradable shares, accelerated in 2005. These reforms were aimed at addressing problems such as that prices of a tradable share and a nontradable share of the same company were different, so there were two prices (or valuations) for one company; and that holders of nontradable shares (usually controlling shareholder and state-owned enterprises) were indifferent to market price of their shares since they were unable to benefit from the increase in share prices on the tradable market. In 2006 the fairly restrictive Securities Law and Company Law were revised and made more accommodating. These capital market reforms created a platform upon which China's private equity market could develop.

The Law on Partnership Enterprises was revised in August 2006 (and made effective in June 2007; see details below). The change formally recognized venture capital firms formed under the general limited partnership format commonly used overseas, and also addressed the issue of double taxation.

On September 8, 2006, the Ministry of Commerce and other government entities announced Rules Governing Mergers and Acquisitions of Domestic Enterprises by Foreign Investors (Directive No. 10), which required that domestic companies obtain approval from the Ministry of Commerce to establish an SPV overseas. In addition an SPV using its equity to merge with or acquire a domestic firm must obtain approval from the Ministry of Commerce and then the CSRC, and if it does not list within a year, it must restore the domestic firm to its original equity composition. These rules have effectively once again closed off the route to red-chip listings. The government's motivation in doing so was likely to prevent China's best companies and assets from listing overseas, which would put them out of the reach of the CSRC and also reduce tax revenues, and to encourage them to instead list domestically and thereby strengthen China's own capital market.

Order No. 10 of 2006 made red-chip listings more difficult, but such listings were still easy for those companies that had begun the process prior to Order No. 10 going into effect. Over the longer term, start-ups will probably increasingly seek funding from domestic sources and list their shares on domestic markets.

Recent Development

Foreign private equity firms have accounted for the majority of domestic private equity investments thus far, but domestically capitalized private equity funds should also start making news. These include the "industrial investment funds" initiated by local governments, one example of which is the Bo Hai Industrial Investment Fund promoted by the City of Tianjin. The fund, established at the end of 2006 with assets of RMB6.08 billion, actually began investing in 2007. Another example is the private equity funds established by China's private sector. Although

previously on a small scale, a large number of new ventures have been formed as limited liability partnerships in response to the 2007 revision of the Law on Partnership Enterprises.

Because of the increased difficulty in obtaining overseas listing for the companies they invest in, a number of foreign private equity firms are starting to consider domestic listings. One way to achieve this would be to convert the subject domestic venture into a limited liability foreign-invested company, and then list it on a domestic exchange (Sekine 2008). Another approach would be to establish a domestic renminbi (RMB) fund using foreign private equity. Dozens of RMB funds have already been established as joint ventures between foreign investors and local governments.

Private Equity–Related Laws and Regulations

Here I examine some of the above-mentioned laws and regulations.

Rules Governing Foreign-Invested Venture Capital Enterprises (2003)

The Rules Governing Foreign-Invested Venture Capital Enterprises regulate the establishment of VC firms within China using foreign capital. It includes the requirements for such establishment. These regulations effectively laid the groundwork for limited liability partnerships back in 2003, prior to revision of the Law on Partnership Enterprises.

Foreign-invested VC firms can be either unincorporated or incorporated (Article 4). All investors in unincorporated VCs have joint and several liability with respect to the venture's obligations. However, they are able to enter into an investment agreement that states that if the unincorporated VC does not have sufficient assets to pay back its debt, its "requisite investors"(or general partners [GPs]) have joint and several liability, but other investors' liability is limited to the amount of their investment. The liability of each investor in an incorporated VC is already limited to the amount of his or her investment (Article 4). In fact nearly all of the foreign-invested VC funds established thus far are based on joint venture (cooperative) agreements (DLA Piper 2008).

A foreign-invested VC firm can outsource day-to-day management to either a venture capital management firm or to another VC firm (Article 21). The venture capital management firm hired can be a domestic, foreign-invested, or overseas firm (Article 21).

Investors can recover the funds they have invested through various means, including by selling their stake in the venture. Specifically they can (1) transfer their ownership to another investor; (2) have the venture agree to buy back their shares; (3) sell their shares on a domestic stock exchange after the venture is listed on that exchange; or (4) use some other legally approved method (Article 34).

In a nonincorporated VC firm, either each investor individually pays corporate income tax (at a rate of 25 percent) as stipulated under national tax laws, or the

unincorporated VC firm pays the combined tax for all investors (Article 35). An incorporated VC firm pays a corporate income tax of 25 percent. This creates the problem in an incorporated VC firm of double taxation, because investors are paying tax at both the corporate and the individual income tax levels. That said, 70 percent of the amount invested in an incorporated, high-tech smaller business (unlisted, with investments lasting at least two years) can be deducted from taxable income.

Provisional Rules Governing Administration of Venture Capital Enterprises (2006)

The Provisional Rules Governing Administration of Venture Capital Enterprises establishes rules for VC firms. Under this law the companies that VC firms invest in must be domestic growth companies that are not listed publicly (Articles 2 and 14; this excludes unsold shares after the target company is listed). Some of the conditions for establishing a VC firm according to that law are as follows: (1) actual paid-in capital must not be less than RMB30 million; (2) the number of investors shall not exceed two hundred, the number of investors in VC firms established as limited liability companies shall not exceed fifty, and the VC firm investment from each investor shall not be less than RMB1 million; and (3) at least three high-level managers with two or more years of experience in venture investments or related areas shall take responsibility for investment management.

Law on Partnership Enterprises (2007)

The Law on Partnership Enterprises provides a legal basis for limited partnership corporations. Partnership enterprises include both general partnerships and limited partnerships established within China by a natural person, juridical person, or organization. Limited partnership enterprises are formed by general partners and limited partners, with the general partner bearing unlimited liability for the debts of the partnership enterprise, and the limited partners bearing liability for said debts up to the amount of their investment (Article 2). Each partner pays his or her own income taxes (Article 6), thereby avoiding the problem of double (corporate and personal) taxation.

Capital Markets for Growth Companies in China

Importance of Domestic Capital Markets

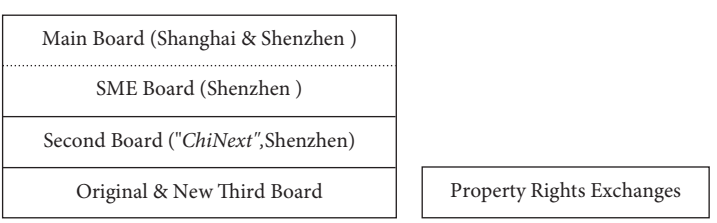
One of the reasons sometimes given for the importance of a capital market for venture companies in China is China's goal of becoming an "innovative nation" by

2020. The idea is that, by developing its own technological innovativeness, China will address the long-standing issue of how to restructure its industry and change the engines of its economic growth to create an energy-saving and environmentally friendly society. One option would be for Chinese industry to switch from being a labor-intensive producer of low-priced goods to being a producer of more sophisticated high-value-added goods. In such a case fostering the development of high-tech companies would clearly be key. However, relatively new and small high-tech companies have long found it difficult to raise capital.

Another consideration is the reform of China's capital markets. In 2004 the State Council published *Some Opinions on Promoting the Reform, Opening and Steady Growth of the Capital Market* (the *Nine Opinions*), a document that became the blueprint for this venture and that proposes the creation of a multitier capital market. The reason for this is that most of the capital raised on China's stock markets is raised by large companies listed on the Main Board and that high-tech growth companies have had almost no opportunity to do this.

To deal with this, the government has created a multitier market consisting of the Main Board in Shanghai and Shenzhen (established in 1990 and 1991, respectively), the SME Board in Shenzhen (2004), the Second Board in Shenzhen (2009), and the Third Board (an OTC market, in 2001 and 2006; see below for details). The SME Board is part of the Main Board, and the companies listed on it are actually big. As far as different market tiers are concerned, property rights exchanges can be added to this multitier market as they trade the shares of unlisted companies (Figure 25.1).

IPOs are the primary exit strategy for private equity investments. The number of Chinese companies undergoing an IPO has consistently risen since 2002, despite the freeze on domestic IPO activity from April 2005 until May 2006. More than half of the equity financing raised in both 2005 and 2006 came from overseas markets. Since H2 2006, however, the Chinese government has discouraged Chinese companies from conducting their IPOs on overseas markets, based on the idea of fostering growth of domestic markets and preventing an overseas exodus of quality assets. There also emerged an argument that China's companies should raise funds in domestic markets since there were excess domestic savings from the macroeconomic viewpoint. With the government having adopted policies promoting listing



(Source) Nomura Institute of Capital Markets Research

Figure 25.1 Schematic diagram of China's multitier stock market.
Source: Jingu 2009.

on domestic markets, we expect China's private equity market to turn more to domestic IPOs. In other words, the government must provide a domestic platform for PE funds' exit and venture companies' listing.

In the following sections, each of the layers of capital markets related to venture companies and PE funds is explained.

The Small and Medium-Size Enterprise Board[1]

A New Section within the Shenzhen Stock Exchange

The Small and Medium-Size Enterprise (SME) Board was established as a new section within the Shenzhen Stock Exchange on June 25, 2004. It is a category within the exchange's Main Board rather than a separate division with its own listing rules.

Its relationship with the existing Main Board is described in Chinese as one of "two constants" and "four independences." "Two constants" refers to the fact that the SME Board (1) is largely subject to the same basic rules (e.g., on issuance, trading, and disclosure) and (2) has the same listing rules as the Main Board. "Four independences" refers to the fact that (1) the way the SME Board operates (e.g., its trading system), (2) its system for monitoring trading, (3) its easily recognizable stock coding system, and (4) its stock index are different from those of the Main Board.

Differences from the Main Board

The SME Board has a number of new sets of rules intended to safeguard investors (e.g., by ensuring greater transparency, less volatility, and more disclosure). In addition stricter delisting rules and special rules to warn investors of possible delistings were adopted on January 1, 2007.

First, trading: As on the Main Board, each day's opening prices are determined by a call auction held from 9:15 to 9:25. However, in contrast to what happens on the Main Board, information on what happens during the auction (e.g., the number of shares that match and the number that fail to match reference prices) is reported. On the SME Board a call auction is also used to determine each day's closing prices. This takes the form of a closed auction, where the information is not reported, held from 14:57 to 15:00. At the opening and close of each session, prices (especially of SME stocks, which tend to have relatively small capitalizations) tend to be very volatile. The authorities decided on this procedure in order to minimize price fluctuations and the risk of market abuse. However, between the opening and the close (i.e., 9:30–11:30 and 13:00–14:57) a continuous auction is held in the same way as on the Main Board.

Second, the SME Board's special price limit is different from that of the Main Board. China's Main Board has a daily price limit of 10 percent. In addition, however, a special provision for suspending trading has been adopted to prevent

[1] This section is largely drawn from Inoue (2007).

abnormal price fluctuations on the SME Board. It is based on above-average price movements (a total deviation of ±20 percent from the market average for any three days) and/or an exceptionally high turnover ratio (a daily average turnover ratio for three days or less of 30 times the average for the preceding five days and a cumulative turnover ratio of 20 percent), which reflects the volatility and price manipulation that is so common in China. One of the reasons the SME Board's stock index is calculated independently of that of the Main Board (one of the "four independences") is to enable the exchange to calculate the criteria for the price limit. In addition to these rules for suspending trading, when the price of a particular stock fluctuates sharply or its volume increases significantly, the stock exchange now reports the size of the transactions and the names of the market participants in the five largest transactions.

Third, disclosure has been improved. The disclosure requirements for the companies listed on the SME Board have been tightened. These companies are now required to hold regular briefings, at which they must inform investors about their growth strategies and any new products or technology as well as the state of their finances and earnings. Also, if they invest any capital they have raised, they are required to give the details to a certified public accountant and to include them in their regular reports. Similarly, whereas companies listed on the Main Board have to give details of only their ten principal shareholders every six months, those listed on the SME Board are required to do this every quarter.

Fourth, since January 1, 2007, there is a new system for warning investors of the risk that a company may be delisted as well as stricter suspension and delisting rules than on the Main Board. Under the new system the Shenzhen Stock Exchange is required to inform investors of the risk that a company may be delisted (1) if shareholders' equity (net assets) has been negative during the latest fiscal year, (2) if the exchange considers that an adverse audit opinion or a report of any illegality given by a certified public accountant in the auditor's report for the latest fiscal year is serious, (3) if it has pledged collateral worth more than RMB100 million and 100 percent or more of its net assets on behalf of a third party during its latest fiscal year, (4) if the audit for its latest fiscal year reveals that it has illegally lent its controlling shareholder or other affiliates RMB20 million or 50 percent or more of its net assets, (5) if it receives an official reprimand within twenty-four months of receiving a previous one, (6) if the closing price of its shares is less than their par value for twenty trading days in a row, and (7) if less than RMB3 million of its shares are traded during a continuous period of 120 trading days. If no improvement occurs after a certain period (e.g., one fiscal year), the company's shares will be suspended and, if there is still no improvement, delisted.

Fifth, there are now tighter controls on what companies may do with any capital they raise. On July 12, 2006, the Shenzhen Stock Exchange issued a rule requiring companies listed on the SME Board to tighten their controls on such capital. At one time it was not uncommon for listed Chinese companies to misappropriate such capital, so the authorities introduced a requirement for the funds to be held in a separate bank account. The 2006 rule was more specific in an attempt to tighten

up these controls. Among its provisions were requirements (1) for the commercial bank at which the account was opened, the company itself, and its sponsor to sign an agreement on how the funds should be managed; (2) for the company to issue regular reports (and irregular reports if there were any large debits to the account); (3) for the company to issue an annual report on the use of its funds; and (4) for the company to revise its original plan for the use of the funds if its actual use deviated from it by 30 percent.

Types of Companies Listed

At the end of 2008, 273 companies were listed on the SME board. These had average total assets of RMB1.91 billion. This was 6.37 percent of the average (RMB29.974 billion) for all the companies listed on Shanghai and Shenzhen stock exchanges, showing that many of the companies listed on the SME Board are relatively small. In terms of market capitalization, however, the gap is narrower. Whereas the average market capitalization of all listed companies was RMB7.47 billion, that of the companies listed on the SME Board was RMB2.30 billion, 30.8 percent of this.

Although one might expect the companies that are listed on the SME Board to be high-growth, high-tech companies, they actually come from a wide range of (albeit mainly manufacturing) sectors. By no means all are venture companies. While many are relatively new, some were established in the early 1990s. Therefore the SME Board is better described as a market for SMEs from a wide range of sectors, including traditional ones, than as a market for high-tech or venture companies. Also it has a smaller proportion of state-owned enterprises than the Main Board. This is because its main aim is to assist the development of private companies.

The Second Board (the ChiNext, or the Growth Enterprise Market)

The Second Board's History and Objectives

On March 31, 2009, the CSRC issued Interim Measures on the Administration of Initial Public Offerings and Listings of Shares on the ChiNext, which came into force on May 5, 2009. This marked the creation by the Shenzhen Stock Exchange of the long-awaited market for venture businesses. As the original plan to establish such a market in 2001 had come to nothing when the dot-com bubble burst, the market's final opening came after a delay of nearly ten years.

The creation of the Second Board was an important development in that it gives private equity funds the opportunity to exit their investments. The absence of such an exit had been a disincentive to such investment. Another problem was that partnerships had not been able to open securities trading accounts. However, the related measure was revised on December 21, 2009, which enabled private equity partnerships to exit their investments via the Second Board.

The Second Board is governed by a number of rules. These include (in addition to the Interim Measures) Interim Measures on Securities Issuance and Listing Sponsor System, Provisional Measures of the Public Offering Review Committee of the China Securities Regulatory Commission, Rules Governing the Listing of Shares on the ChiNext of Shenzhen Stock Exchange, various rules governing the monitoring of the eligibility criteria for qualified investors, Application Documents for Initial Public Offerings and Listings of Shares on the ChiNext, and Prospectuses of ChiNext Companies. I now take a closer look at the rules governing the Second Board, especially the Interim Measures.

Rules and Regulations Governing the Second Board

The Interim Measures came into force on May 1, 2009, and consist of six chapters (dealing with "offering conditions," "offering procedures," "information disclosure," and "supervision and legal liabilities") and fifty-eight articles.

The first thing the General Provisions chapter says is, "These Measures are formulated for the purposes of promoting the development of innovative enterprises and other growing start-ups" (Article 1). This shows that one of the main listing criteria is a company's technological innovativeness and growth potential. The Chinese authorities have actually made it clear that, although the Second Board and the SME Board are both intended for SMEs of similar sizes, the Second Board is specifically intended for SMEs at the initial (rather than the growth or mature) stage of their development with a high degree of technological innovativeness and an innovative business model, while the SME Board is specifically intended for companies with relatively stable earnings at the mature stage of their development. The Chinese authorities also made it clear that the Second Board is not simply a small SME Board. This suggests that the authorities want to see technologically innovative companies listing on the Second Board and SMEs in traditional sectors listing on the SME Board.

Article 7 says, "A market access system that is commensurate with the risk tolerance of investors shall be established for investors on the ChiNext and investment risk shall be fully disclosed to investors." One noteworthy feature is the adoption of the concept of the "qualified investor" in an attempt to improve risk control.

According to the Shenzhen Stock Exchange's rules, "investors that are natural persons and with at least two years' experience of trading on the stock market" may apply to trade on the Second Board. In addition securities companies and their clients (i.e., investors) are required to sign a "Second Board risk declaration form" at the securities companies' offices. However, this does not mean that anyone with less than two years' experience of investing in the stock market is not allowed to invest in Second Board stocks—only that, in addition to the aforementioned procedures, they are required to make a written declaration that they are prepared to accept all the risks involved.

Article 8 says, "CSRC shall, in accordance with law, examine and approve the issuer's IPO application and supervise the issuer's IPO activities. The stock

exchange shall formulate rules in accordance with law, provide an open, fair and equitable market environment and ensure the normal operation of the ChiNext." Until the Second Board was established, it was thought by some that the stock exchange had the right to approve new issues. Under the Interim Measures, however, it is the CSRC that examines and approves applications.

Article 10 of the Offering Conditions chapter stipulates four conditions for companies applying for IPOs:

1. The issuer must be a duly incorporated company limited by shares and must have been in operation for more than three consecutive years. For any company limited by shares which has been transformed as a whole from a limited liability company by converting its original book value of net assets into shares, the required operation period may be counted from the date of establishment of the limited liability company.

2. The issuer must have been profitable in the two most recent consecutive years, with accumulated profits no less than RMB10 million and in steady growth; or the issuer must have been profitable in the most recent year with net profits of no less than RMB5 million and revenues of no less than RMB50 million, and its revenue growth rate for either of the two most recent years must have been no less than 30 percent. Net profits shall be calculated based on the amount before or after deducting nonrecurring profits and losses, whichever is smaller.

3. The issuer must have net assets of no less than RMB20 million at the end of the most recent accounting period with no uncovered losses.

4. The issuer must have a total share capital of no less than RMB30 million after the IPO.

These conditions are less demanding than those for the Main Board, including the SME Board (see Table 25.1). However, the authorities have sought to safeguard investors and ensure risk control by introducing the aforementioned concept of the qualified investor and various other measures (see below).

In qualitative terms, the issuer must mainly operate one line of business, its assets must not be dispersed, and its earnings must be sustainable. More specifically with regard to the latter, the Interim Measures stipulate that the issuer's business model or its mix of products or services must not have undergone or undergo any material change that has or will have a significant adverse impact on its sustainable profitability.

They further stipulate that in the most recent two years, there must have been no significant changes in the principal business, directors, and senior management of the issuer, nor any change of its de facto controller (Article 13). There must be no intra-industry competition, nor any related-party transaction that severely affects the company's independence or is obviously unfair, between the issuer and its controlling shareholder, de facto controller, or any other enterprise under the control thereby (Article 18). The issuer shall have a sound corporate governance structure and have established such systems in accordance with law as the shareholders' general meeting, board of directors, and board of supervisors as well as independent

Table 25.1 Comparison of Listing Standards

Main Board (Measures for the Administration of Initial Public Offering and Listing of Stocks)	**Second Board** (Administrative Measures for Initial Public Offerings and Listing on the Second Board)
Qualities:	Qualities:
A joint-stock company with at least three years doing business since establishment. For any joint-stock company that has been transformed as a whole from a limited liability company by converting its original book value of net assets into shares, the required operation period may be counted from the date of establishment of the limited liability company. (Article 9)	A joint-stock company with at least three years doing business since establishment. For any joint-stock company that has been transformed as a whole from a limited liability company by converting its original book value of net assets into shares, the required operation period may be counted from the date of establishment of the limited liability company (Article 10.1).
No substantial change in the primary business content, the directors, or senior management, and no change in the effective controlling shareholder, within the past three years (Article 12).	No substantial change in the primary business content, the directors, or senior management, and no change in the effective controlling shareholder, within the past two years (Article 13).
Accounting:	Accounting:
Positive net profit for each of the past three years and cumulative net profit of at least RMB30 million over the past three years, using the lower of net profit before extraordinary items and net profit after extraordinary items (Article 33).	The issuer must have been profitable in the two most recent consecutive years, with accumulated profits no less than RMB10 million and profits in steady growth; or the issuer must have been profitable in the most recent year with net profits of no less than RMB5 million and revenues of no less than RMB50 million, and its revenue growth rate for either of the two most recent years must have been no less than 30%. Net profits shall be the lower of net profit before extraordinary items and net profit after extraordinary items (Article 10.2).
Cumulative cash flow over the past three years of no less than RMB50 million, or cumulative operating revenue over the past three years of no less than RMB300 million (Article 33).	
Total capital prior to issuance shall be no less than RMB30 million (Article 33).	
Intangible assets (excluding concessions for land use, cultivation, and mining/drilling, etc.) at the end of the immediately prior period of no more than 20% of net assets (Article 33).	The issuer must have net assets of no less than RMB20 million at the end of the most recent accounting period with no uncovered losses (Article 10.3).
No uncovered losses at the end of the most recent accounting period (Article 33).	The issuer must have a total share capital of no less than RMB30 million after the IPO (Article 10.3).

directors, board secretaries, and audit committee (Article 19). And the issuer and its controlling shareholder and de facto controller shall not have committed any major illegal acts in the three most recent years that impair investors' legitimate rights and interests or public interests (Article 26).

The Rules Governing the Listing of Shares on the ChiNext of Shenzhen Stock Exchange specify a lock-up period for shares owned by an issuer's controlling shareholder and de facto controller. While there is a risk that the controlling shareholder and the de facto controller may sell their shares as soon as a company is listed and that the company's stability may be threatened if the lock-up period is too short, there is a risk that private equity funds may be deterred if it is too long because they may not be able to recover their investment for a long time. For these reasons, (1) the controlling shareholder and the de facto controller may sell their shares after at least three years have passed since the shares were listed (i.e., on the same conditions as the Main Board); (2) other shareholders may not sell any shares acquired during the six months immediately preceding the listing application as a result of a capital increase for twelve months after listing, no more than 50 percent of such shares twelve to twenty-four months after listing, and the remainder only at least twenty-four months after listing; and (3) any other shares may be sold twelve months after listing in accordance with the Company Law.

Regarding offering procedures, the Interim Measures seek to make sponsoring securities companies more responsible by requiring them to conduct due diligence investigations and make prudential judgments on the issuer's growth and render special opinions thereon. They also require the sponsoring companies to explain the issuer's innovative capability in its special opinions if the issuer is an innovative enterprise (Article 32). Furthermore they require listing applications to be reviewed by the CSRC's ChiNext Public Offering Review Committee (Article 34).

According to the Provisional Measures of the Public Offering Review Committee of the China Securities Regulatory Commission, companies considering a listing on the Second Board should be "innovative enterprises and other growing start-ups." Separate review committees have been set up for listings on the Second Board as well as the Main Board and mergers and acquisitions by listed companies to reflect the fact that the Second Board is different from the Main Board in terms of offering conditions, information disclosure, and ongoing supervision (Article 2). The chairs of each review committee are not allowed to be members of any of the other review committees (Article 7). This is to ensure the independence and specialized nature of the Second Board's own public offering review committee.

The Rules Governing the Listing of Shares on the ChiNext of the Shenzhen Stock Exchange endeavor to assert the principle of the survival of the fittest by applying strict delisting rules. To reflect the fact that investing in companies listed on the Second Board is risky, the delisting criteria, like those for SME Board stocks, are more rigorous than those for Main Board (excluding SME Board) stocks. Drawing on the experience of the SME Board, some of the delisting rules are based on those of the SME Board.

More specifically, (1) when shares are delisted, they are "delisted directly." In other words, unlike Main Board shares that have been delisted, they are not automatically traded on the original Third Board (OTC market). However, if a delisted company satisfies the conditions of the original Third Board, it can apply to have its shares traded on that market. (2) Two new delisting conditions have been added: where a company's net assets in the prior fiscal year are shown as negative in the auditor's report and where a certified public accountant has issued an adverse opinion or a disclaimer of opinion in a company's annual report for the prior fiscal year and this is deemed serious by the exchange. (In the case of Main Board stocks, the condition is that a company has reported a loss for the past three fiscal years, which also applies to the Second Board.) (3) Also companies that fail to publish an annual or half-yearly report by the prescribed deadline will have their shares delisted, at the earliest after three months (compared with six months in the case of the Main Board). In addition, in the case of (2), the exchange will decide whether to delist shares in which trading has been suspended on the basis of the company's next half-yearly report without waiting for its next annual report. (4) In order to ensure that market efficiency is not affected by a lack of liquidity, a company's shares will be delisted if their cumulative trading volume over 120 trading days is less than RMB1 million shares.

Regarding information disclosure, Article 39 of the Interim Measures stipulates that the issuer shall make a statement in its prospectus pointing out the risks of investing in Second Board companies: inconsistent performance, high operational risk, and the risk of delisting. Similarly Article 41 stipulates that the issuer and all of its directors, statutory auditors, senior management, the sponsoring securities company, the controlling shareholder, and the de facto controller shall sign and seal the prospectus to ensure the truth, accuracy, and completeness of its contents. This is to emphasize the responsibility of all those involved and to make investors fully aware of the risks. These are the regulatory principles behind the establishment of the Second Board.

Regarding supervision, Articles 51 and 52 stipulate that the stock exchange (i.e., the Shenzhen Stock Exchange) shall establish systems for listing, trading, and delisting Second Board stocks, urge sponsors to fulfill their ongoing supervisory obligations, and establish a system for educating investors.

Once the rules and regulations governing the Second Board were published, the CSRC began to accept listing applications on July 26, 2009. As of mid-August, a total of 115 companies had applied.

Thus far, few companies in which foreign private equity funds have a stake have applied. This is because these funds have tended to go for red-chip listings. A company with the ownership structure required for a red-chip listing would have to modify that structure if it wanted a domestic listing.

Another point is movement between the various tiers of China's multitier capital market. As of August 6, 2009, three companies that are traded on the new Third Board had successfully applied to list on the Second Board. Eighteen new Third Board companies met the listing requirements of the Second Board on the basis of their annual reports for fiscal 2008, and a growing number of companies may

transfer their listing from the new Third Board to the Second Board. I think this is likely to make the new Third Board a more attractive market for private equity investors. I also think that, once the Second Board becomes more established and if a growing number of companies choose to transfer their listing from the new Third Board to the Second Board, the new Third Board will become more attractive and China's multitier capital market as a whole will benefit.

The Third Board Market

This section looks at the Third Board, China's OTC stock market. Until now, the Third Board has been a small and illiquid market, attracting little attention. However, I expect the Third Board to gain in importance following the establishment of the Second Board. As the Second Board is intended to foster the development of technologically innovative and high-growth start-ups, the role of the Third Board (e.g., to help companies at an even earlier stage of their development) is likely to become clearer.

Developments to Date

The Original Third Board

In the early 1990s China had two trading systems: STAQ (Securities Trading Automated Quotation System, established on December 5, 1990, by the Stock Exchange Executive Council, and NET (National Electronic Trading System, established on April 28, 1993, using the People's Bank of China's satellite system to trade marketable securities (Inoue 2007). Both were established with the approval of the State Council as automated quotation systems for legal person shares.

Since February 1993, a number of new OTC markets have been established. However, in 1997 a rush by local governments to establish OTC markets led to unregulated trading on more than a hundred of them. As a result, in November 1997 the Central Financial Work Commission decided to shut down all those OTC markets that had been established illegally. In September 1999 STAQ and NET were also shut down.

In 1993, when both STAQ and NET reached their zenith, legal person shares in a total of seventeen companies (ten stocks on STAQ and seven on NET) were traded on the two markets, which had 500 members and 32,000 account-holding (institutional) investors.

On May 25, 2001, the Securities Association of China (SAC) issued a ruling, based on an opinion issued by the CSRC, that a number of securities companies should be allowed to operate on a trial basis a transfer system for (i.e., an OTC market in) stocks that had been traded on STAQ and NET.

Following on from that, on June 12, 2001, SAC issued Provisional Measures on Agency Share Transfer Services by Securities Companies. The system officially

came into operation on July 16, marking the start of the original Third Board. Initially nine stocks previously traded on STAQ and NET were traded three times a week by six securities companies' sales departments. In the same year (2001) a delisting procedure was finally introduced on the Main Board. This raised the question of what to do with the shares of delisted companies and paved the way for such shares to be traded on the Third Board. The original Third Board thus became the market where the shares that had previously been traded on STAQ and NET as well as the shares of companies that had been delisted from the Main Board were traded. However, the original Third Board has no provision for IPOs or capital increases.

The New Third Board

Because the original Third Board did not enable companies to raise capital and the shares that were traded on it were those of companies that either had been delisted or were a "negative legacy" of closed markets, there was movement to set up a proper OTC market with the aim of fostering high-tech high-growth start-ups in order to create a multitier market. On January 16, 2006, SAC announced Provisional Guidelines for Quoting and Transferring Shares in Unlisted Companies Incorporated in Zhongguancun Science Park. On January 23 the new Third Board became operational when the shares in two companies were registered there. As it currently covers only high-tech companies incorporated in the Zhongguancun Science Park, it is still at an early stage of its development. As we will see, however, there are plans to extend its coverage to the entire country.

The Original and New Third Board Markets Today

Current Situation

At the end of April 2009, fifty-five stocks were traded on each of the two markets, making 110 in total (SAC website). The overall issue value of the OTC market is RMB11,865.64 million; its market value is RMB10,889.95 million; and the market value of its tradable shares is RMB4,662.73 million. This compares with a market value of RMB17 trillion for the Main Board (A and B shares listed on the Shanghai and Shenzhen stock exchanges) and RMB926.8 billion for the SME board, both as of the end of April 2009.

As the original Third Board is also the market where stocks delisted from the Main Board are traded, it covers a wide range of sectors, including conglomerates (11 companies), real estate (5), nonferrous and light metals (5), software (5), and agriculture (4). In contrast, the breakdown for the new Third Board—computer software (21), communications equipment (7), specialist machinery and equipment (3), chemicals (3), and biopharmaceuticals (2)—shows that it consists largely of IT and high-tech companies.

Figures on trading value (a mere RMB4,430 million in 2007 and RMB1,790 million in 2008 for the two markets combined) show that most of the trading has been done on the original Third Board. This compares with a trading value of

RMB25 trillion for the Main Board and RMB1,663.7 billion for the SME board, both in 2008.

Although the new Third Board's sector coverage gives it more of an image of a start-up market than the original Third Board, volume is even lower. Of the twenty-five stocks for which trading data are available since the start of 2008, one was never traded at all in the whole of 2008, five were traded only once, and two were traded only twice and three times, respectively. Both Third Boards are therefore still very small and illiquid compared with China's capital market as a whole.

How the Original Third Board Operates

Responsibility for regulating the two boards is divided between the CSRC and SAC, with the former being responsible for basic policy and the latter for specific regulations. As securities companies play a key role on the Third Board, SAC uses them as a means to regulate the market.

Investors wishing to trade on the original Third Board first need to open a transfer (i.e., dealing) account for unlisted stocks. Orders to buy and sell stocks can be placed between 9:30 and 11:30 or between 13:00 and 15:00. Reference dealing prices are displayed until just before 15:00. These are the prices at which orders would be executed assuming that all the orders up to that point in time had been matched simultaneously. However, the actual dealing prices are determined by simultaneous matching at 15:00. This system was adopted on September 15, 2003, to increase transparency.

Trading frequency is determined as follows: shares in companies with positive net assets and a net profit are traded five days a week; those in companies with positive net assets but a net loss are traded three days a week; and those in companies that fail to disclose key data or have no agency share transfer agreement with a sponsoring securities company (see below) are traded once a week. Stocks traded five days a week have a stock code ending in 5; those traded three days a week have a code ending in 3; those traded only once a week (on Friday) have a code ending in 1.

The original Third Board uses the sponsoring securities company system. As of May 2009 there were thirty sponsoring securities companies. Acting as a sponsor requires a securities company to advise companies whose shares are traded on the original Third Board and to act as a stock transfer agent. This includes signing agency share transfer agreements with companies whose shares have been delisted, regulating their disclosures, and temporarily suspending the transfer of shares in companies that fail to comply with disclosure requirements.

As far as disclosure is concerned, companies whose shares are traded five days a week are required to meet similar standards as listed companies, which are required to publish an annual report (within four months of the end of their fiscal year), an interim report (within two months of the end of their first half), and quarterly reports (within one month of the third and ninth months of their fiscal year). Those whose shares are traded three days a week are required to publish an

audited annual report within four months of the end of the fiscal year concerned. By definition, companies whose shares are traded only one day a week have not disclosed any information. Also any material items and financial circumstances must be reported within the required period for each.

How the New Third Board Operates

Capital Increases

In January 2006 SAC announced Provisional Guidelines for Quoting and Transferring Shares in Unlisted Companies Incorporated in Zhongguancun Science Park (Provisional Guidelines) together with seven related regulations. As we have seen, the market's lack of appeal to both investors and companies seeking to raise capital as well as the thin margins it offers securities companies have created a vicious cycle wherein market participants (companies, investors, and securities companies) lack incentives and liquidity dries up even more. In response to this, SAC amended the Provisional Guidelines, which came into effect on July 6, 2009.

A company that wants its shares traded on the new Third Board must first satisfy the following criteria: (1) it must have been in business for at least two years; (2) it must have a clearly recognizable main business and the management potential to remain in business; (3) it must have proper corporate governance and operate according to the rules; (4) its shares must be legally issued and transferred; (5) it must have been certified by the Beijing City authorities as eligible to trade on the new Third Board; and (6) it must satisfy any other criteria imposed by SAC.

The lock-up provisions governing shares already in existence when a company's shares are first traded on the new Third Board have been relaxed. Under the original rules, all existing shareholders were allowed to dispose of a third of their shareholdings when the company's shares were first traded on the new Third Board, another third one year later, and the final third two years later. Under the amended Provisional Guidelines, however, the lock-up period for shares owned by company directors, the statutory auditor, and senior managers has been reduced to twelve months in accordance with the Company Law, while that for shares owned by the controlling shareholder and the de facto controller of the company remains unchanged. Other shareholders are also subject to the Company Law and the Securities Law.

Unlike companies whose shares are traded on the original Third Board, those whose shares are traded on the new Third Board are allowed to issue new shares in order to raise capital. This is in line with the aim of fostering the development of high-tech SMEs. Indeed there have been a number of such issues since the end of 2006.

However, such issues are not supposed to lead to the creation of more than two hundred shareholders. They therefore have to be private issues (under Article 10 of China's Securities Law), and companies are not allowed to advertise them or solicit subscriptions. The subscribers to such issues are decided by private negotiation

before the board of directors meets to decide whether to go ahead. Subscribers tend to include strategic investors.

The new Third Board is therefore classified as a market for trading shares in unlisted nonpublic companies. As the original Third Board also trades shares in delisted companies, it is classified as a market for trading shares in unlisted public companies. This is another difference between the two Third Boards.

When a company raises capital by issuing new shares, the existing shareholders usually have first choice of whether to subscribe to a certain proportion (about 70 percent). They decide this at a general meeting of shareholders. The remaining shares (as well as any that the existing shareholders have not taken up) are allocated to new shareholders. In order to attract long-term investors, the new shares are subject to a lock-up period of twelve months.

At the end of May 2009 nine companies had raised capital in this way. However, the amount of capital raised has not been very large thus far, totaling RMB396 million for the nine companies concerned. The investors that have subscribed to such issues include twenty-three institutional investors and fifteen venture capitalists. This shows that the latter regard companies whose shares are traded on the new Third Board as suitable investments (*Securities Daily*, February 11, 2009).

Methods of Trading and Disclosure of Information

Anyone investing in the new Third Board needs to have an account for dealing in A shares on the Main Board (in Shenzhen). Under the amended Provisional Guidelines participation is now normally restricted to institutional investors (including juridical persons, trusts, and partnerships), with only individual investors who already had shares in the companies concerned before the shares in these companies were traded on the new Third Board being allowed to participate.

Unlike on the original Third Board, where buying and selling are done by simultaneous matching of orders, the new Third Board negotiates among securities companies. Basically investors place orders with securities companies, which quote prices on the quotation systems in order to find counterparties. However, investors may also find a counterparty without using the automated quotation system. It is also possible to place limit orders to make the process more efficient. Orders can be placed Monday to Friday, between 9:30 and 11:30 or between 13:00 and 15:00. The minimum trading lot is 30,000 shares.

Securities companies dealing in shares on the new Third Board on behalf of customers have to be licensed by SAC. As of May 2009, there were twenty-eight securities companies licensed to deal in shares on the new Third Board on behalf of customers.

Companies whose shares are traded on the market are initially required to publish a document giving basic information. They are also required to publish an annual report within four months of the end of each fiscal year as well as an interim report within two months of the end of the first half of each fiscal year. As far as financial statements are concerned, companies are now required to publish cash flow statements as well as balance sheets and income statements. Companies may also publish quarterly reports within four weeks of the end of the third and

ninth months of the fiscal year. They are also required to report any of the following to their sponsoring securities company and disclose this within two business days of its occurrence: any major change in management policy or its scope, any major change in the controlling shareholder(s) or de facto controller of the company, and any serious loss or expected loss.

Future Reform of the Third Board

The SAC will continue to reform the Third Board to make it more attractive.

First, companies traded on the Third Board (both original and new) want to be able to work their way up to either the Second Board or the Main Board; therefore the listing process needs to be speeded up. Although there have been cases of Third Board companies listing on the Main Board, they have followed the official IPO procedure.

Second, market activity needs to be stimulated. Provision has been made for a market-making system to increase liquidity. At the moment, securities companies simply act as brokers. Under a market-making system, however, sponsoring securities companies would buy and hold shares issued by the companies they sponsor when these have a capital increase. They would then use these shares to fill customer orders.

Third, the authorities plan to extend the Third Board to the rest of the country. In 2008 SAC began to register companies from other high-tech parks on a provisional basis and signed agreements with fifty-four such parks, excluding Zhongguancun. Its aim is to attract a growing number of companies from these parks and establish a nationwide OTC market.

I therefore expect these reforms to lead to greater convenience for market participants, a greater number of companies whose shares are traded on the Third Board, better market quality, and greater liquidity.

Property Rights Exchanges

China's property rights exchanges (also sometimes called "equity exchanges" or "asset and equity exchanges") are markets specifically for trading property rights. The country now has more than two hundred such exchanges.

When these exchanges were first established in the late 1980s, their role was to facilitate the transfer of state-owned assets as part of the process of reforming China's state-owned enterprises. In this regard they can be compared to the stock markets established in 1990, whose role was to provide finance for state-owned enterprises. In recent years, however, more attention has been paid to ensuring that the property rights exchanges have a properly functioning market mechanism.

As for the definition of "property right," in October 2003 the Third Plenary Session of the 16th Central Committee of the Communist Party of China announced its Decision on Some Issues Concerning the Improvement of the Socialist Market

Economy, and this defines "property rights" as including "rights over things, creditor's rights, stockholder's rights, and intellectual property rights."

In December 2003 the State-Owned Assets Supervision and Administration Commission (SASAC) and the Ministry of Finance jointly issued the Provisional Rules on the Administration of the Transfer of State-Owned Property Rights in Enterprises, effective February 1, 2004 (see below for further details). These rules, which lay down a standard procedure for transferring state-owned property rights and are still in force, have played an important role in the development of property rights trading in China.

Current State of Property Rights Exchanges and the Rules Governing Them

China now has more than two hundred property rights exchanges. Of these, the Shanghai United Assets and Equity Exchange, the China Beijing Equity Exchange, the Tianjin Property Rights Exchange, and the Chongqing United Assets and Equity Exchange are recognized by SASAC as "central-level" exchanges and are permitted to trade the property rights of central state-owned enterprises (i.e., those supervised by the central government). In addition to these there are sixty-five "province-level" exchanges selected by the SASACs of each province, autonomous region, and municipality, while the rest are referred to as "prefecture-level" exchanges. In recent years there has been a move toward integrating exchanges, with exchanges belonging to the same regional market sharing information, for example. There are four such regional markets: the Yangzi River Basin Regional Property Rights Common Market, centered on the Shanghai United Assets and Equity Exchange; North United Assets and Equities, centered on the Tianjin Property Rights Exchange; the Huang He River Basin Regional Property Rights Market, centered on the Qingdao Property Rights Exchange; and the Western Regional Property Rights Market, centered on the Western Assets Exchange.

The total number of transactions conducted on China's property rights exchanges in 2007 was 35,958 (compared with 33,541 in 2006), while the total value of these transactions was RMB358.2 billion in 2007 (compared with RMB319.3 billion in 2006) (the Yangzi River Basin Regional Property Rights Common Market 2008). In this connection it is perhaps worth pointing out that the total value of transactions on China's A share markets was RMB45,477.1 billion in 2007 (partly as a result of an overheated market) and RMB8,921.7 billion in 2006. As we will see, property rights transactions tend to be one-offs, so it is also worth pointing out that RMB772.3 billion of funds was raised on the A share markets by means of IPOs and capital increases in 2007, and RMB246.4 billion in 2006.

As we have seen, the Provisional Rules on the Administration of the Transfer of State-Owned Property Rights in Enterprises are an important piece of legislation specifically governing the trading of property rights. As the name indicates, these rules lay down a standard procedure for the transfer and trading of state-owned property rights and are intended to ensure that they are regulated more stringently.

They do not cover non-state-owned property rights. As a result the rules governing the transfer of non-state-owned property rights vary from exchange to exchange.

Actual transactions (taking the China Beijing Equity Exchange as an example) include the transfer by auction of state-owned enterprises that have failed, the transfer of shares held by asset management companies as a result of debt-equity swaps (AMCs acquired shares in a corporate borrower in exchange for nonperforming loans that they had purchased from banks), the agreed transfer of some of a state-owned enterprise's operations (e.g., a subsidiary) to enable it to concentrate its resources on its main business, and the transfer by auction of equity in a wholly state-owned enterprise to foreign investors in order to diversify its shareholder structure. They are used in this way with state-owned enterprises to deal with failures, the disposal of bad debts, restructuring (e.g., of subsidiaries), and changes in ownership structures. They are also used to transfer shares in private companies.

Here it is worth mentioning that the decision by the CSRC to require the property rights exchanges to observe the three principles of "nondivisibility," "noncontinuity," and "nonstandardization" prohibited the exchanges from dividing up state-owned assets, packaging them as standardized products, and trading these products continuously. As well as preventing the stripping of state-owned assets, this drew a distinction between property rights exchanges and normal capital markets.

As a percentage of trading value, trading in state-owned property rights has declined from 80.04 percent in 2005 to 76.26 percent in 2006 and 59.08 percent in 2007. It is reckoned that over the next several years at least a third of the central government's state-owned assets will have to be restructured in some way (e.g., to enable state-owned enterprises to concentrate their resources) and that this constitutes approximately RMB2 trillion in latent demand for such transactions (Xinlang Property Rights Exchange Channel et al. 2008). In the longer term, however, trading in state-owned property rights is expected to decline as the reform of state-owned enterprises progresses.

Future Developments

Next I consider the direction in which China's property rights exchanges are likely to develop. The first likely development, in my view, is a widening of the range of products they are allowed to trade. As we have already seen, trading in state-owned property rights is likely to account for an increasingly small proportion of their business. The exchanges will therefore have to create other business opportunities if they are to have a long-term future.

Two such possible opportunities are (1) trading in carbon emission credits, forestry rights, and mining rights and (2) small business finance. The possibility that China's property rights exchanges might become involved in small business finance will be discussed below.

Companies have two ways of raising capital on property rights exchanges: either increasing their capital or selling property rights. In 2004–2007 they raised

RMB70 billion using the former method and RMB800 billion using the latter method. In this connection, it is perhaps worth mentioning that this is roughly 70 percent of the RMB1,136.1 billion that companies raised on the A share markets by means of IPOs and capital increases during this period (Xu 2008). I think that the property rights exchanges will probably become more closely involved with both private equity firms and the diversification of capital markets in raising capital.

Private equity firms currently face the problems of gathering information and of exiting their investments. However, property rights exchanges enable them to find suitable investments (by providing them with information about enterprises that are trying to sell property rights) and to sell rights in companies they have invested in. Similarly property rights exchanges enable enterprises that wish to sell properties to attract strategic investors and raise capital at the same time. As it happens, the Shanghai United Assets and Equity Exchange now plays an important role in mergers and acquisitions as well as in restructuring Chinese industries and financing small businesses (China Beijing Equity Exchange 2008). The property rights exchanges therefore have the makings of successful private equity markets.

Property rights exchanges could play a role in creating multitier capital markets. In fact the bulk of the trading on a number of property rights exchanges has already shifted from real assets, such as plant and equipment, to corporate equity. As a result these exchanges now share some of the features of capital markets (Xu 2008). Judging by comments from the CSRC, however, the Chinese authorities have yet to include the property rights exchanges in their plans to create a multitier capital market. The chairman of the CSRC, Shang Fulin, has been reported as saying that this multitier securities market will comprise the Main Board, the SME Board, the Second Board, and the Third Board (an OTC market). He did not mention the property rights exchanges, although that may be partly because the CSRC is not responsible for regulating them.

At the moment there is a considerable gap between China's capital markets and its property rights markets. Although both developed as a result of the reforms to China's state-owned enterprises, the property rights exchanges are still largely regionally based, whereas the capital markets operate at a national level. The capital markets are regulated mainly by the CSRC, whereas the property rights exchanges are regulated mainly by the SASACs. Also, as we have already seen, there is a clear demarcation between the capital markets, which trade equities and bonds, and the property rights markets, which do not trade standardized packaged products and do not normally trade on a continuous basis.

Therefore, if the property rights exchanges are to be incorporated in a multitier capital market, some regulatory adjustment will probably be required, as well as solutions to the aforementioned challenges.

That said, some of the property rights exchanges have already begun to trade high-tech stocks. A State Council document on the development of China's high-tech industry mentions the role of the property rights exchanges in the trading of unlisted high-tech companies and suggests that the trading of unlisted and privately issued (nonpublic) stocks in government-approved high-tech parks has

a certain legal basis. I think that a number of property rights exchanges would like to use this trading of high-tech stocks as a springboard for engaging more closely with the capital markets (Xinlang Property Rights Exchange Channel et al. 2008).

One recent development was the establishment in September 2008 of the Tianjin Equity Exchange Center for trading in unlisted stocks. Another was the establishment in 2003 of the Zhongguancun Technological Property Rights Exchange in Beijing. Thus far these exchanges have avoided falling foul of the law by restricting their equity trading to noncontinuous trading in shares in companies with no more than two hundred shareholders (i.e., privately placed shares). Furthermore some of the exchanges now offer record-keeping services such as acting as a transfer agent (Xinlang Property Rights Exchange Channel et al. 2008).

We need to compare the trading of unlisted shares on the property rights exchanges with that on other markets. Stocks that are delisted from the Shanghai and Shenzhen stock exchanges are traded on the original Third Board, an OTC share transfer system. In other words, unlisted and publicly issued stocks are traded on the original Third Board. The new Third Board market established in the Zhongguancun Science Park is an OTC market for unlisted and privately issued high-growth high-tech stocks. In other words, the new Third Board markets trade unlisted and privately issued stocks, although the method of trading is different from that on the property rights exchanges (having nondivisibility, noncontinuity, and nonstandardization). To that extent the functions of the property rights exchanges (e.g., the Tianjin Equity Exchange Center) and the new Third Board markets overlap.

When it comes to creating a multitier capital market in China we therefore need to consider not only the Main Board (which includes the SME Board), the Second Board, and the Third Board but also (some of the functions of) the property rights exchanges. The issue as far as unlisted stocks are concerned will be how to demarcate the OTC market from the property rights exchanges, whether to combine the two, or whether to create a new market. However, the situation is already quite complicated, with opinion and regulatory powers divided among those involved. I expect a clearer sense of direction will emerge as time passes.

Future Outlook

Over the long term I expect China's economy to continue to grow and look for a continued succession of new companies with a strong entrepreneurial spirit. As the infrastructure for China's domestic capital markets, including private equity-related laws and regulations, is put in place, conditions will become more favorable for the development of China's private equity market.

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